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NAVAL EFFICIENCY

THE WAR-READINESS OF THE FLEET

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NAVAL EFFICIENCY

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THE WAR-READINESS OF THE FLEET

BY

ARCHIBALD S. HURD

AUTHOR OF

"THE BRITISH FLEET: IS IT SUFFICIENT AND EFFICIENT?"

"HOW THE NAVY IS RUN," ETC.

LIST AND PARTICULARS OF EFFECTIVE SHIPS OF THE WORLD'S NAVIES

UNIV. OF CALIFORNIA

WITH MAP, DIAGRAMS, ETC.

LONDON

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INTRODUCTION

"I believe the Navy has two classes of enemy—those who say the Navy is all wrong, all rotten, and not to be depended upon in time of war; and the other class, more dangerous, and I believe more numerous, who say that the Navy is all right, and that we need not trouble our heads about it."—MR. ARNOLD-FORSTER, M.P., Financial Secretary to the Admiralty, in the House of Commons, February 22, 1902.

IT is impossible to deal with an organization so vast in its proportions and so widely distributed in its influence as the British Navy without realizing the inadequacy of any attempt to explain its present methods, and indicate the principles which should govern future policy. There are many books from which the casual student of naval affairs can obtain the ordinary statements of comparative strength of the different navies, and from time to time manifestoes are published urging radical reforms. The present volume is not intended to rival any of the many schemes for "counting noses," nor to expound any pet panacea for solving the problems in the organization of *personnel* and *matériel*, which press in ever-increasing number upon the administrators of the Fleet. Its aim is modest, its purpose is towards economy, and if it succeeds in directing attention to the need of

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a definite policy of defence, it will not have been written in vain.

No policy of defence.

For two reasons it is hoped that the appearance of this volume at the present juncture may be opportune. First, for two and a half years Great Britain has been involved in a land war 7000 miles from its base of supplies of men, horses, and stores. The difficulties of the campaign in South Africa have led to an exaggerated idea of the importance of the Army in the scheme of Imperial Defence, and have tended to minimize the popular conception of the *rôle* of the Navy. For two years discussion has centred in Army Reform. The country is committed to a scheme of reconstruction which is to provide a force of six Army Corps, organized and, to some extent, equipped in imitation of the German model. The attempt to carry out these proposals has occupied public attention to an undue extent, and had it not been for the public-spirited and often seemingly fanatical action of a handful of writers and speakers, there is every reason to believe that the naval expenditure for the coming year would have been cut down in order to ease the tax-payers at a time when the land-forces are draining the country.

Consistent in our inconsistency, we have never had a definite policy of defence. Usually the Army has absorbed the far larger share of the money set aside for securing our national safety. Successive Governments have played fast and loose with interests of the highest importance in order to serve party ends or to

pose as economists. Now that the combined net estimates for defence have reached a total of sixty million pounds, while the needs of the Navy remain in some degree unsatisfied, it is urgently necessary that the Government should decide upon a well-defined policy, and abandon the haphazard, dangerous, and expensive panic legislation which has been the lever by which the Navy has been raised to its present strength.

Evolution, not revolution.

A second reason for hoping that this volume may not be without its use is to be found in the cry that is raised on all sides for a Navy on a war footing. Evolution, and not revolution, is the safest and most lasting method of progress. There is peril in the repeated demands upon the Admiralty to abandon all the methods of the past and embark upon adventures which experience may show to have been impolitic. It is repeatedly claimed that we need a variety of auxiliary vessels always in commission accompanying the squadrons on their cruises; that the Admirals should be younger; that several of the squadrons in distant parts of the world should be abolished; that the *personnel* of the Fleet should be largely augmented, and that the Admiralty itself should be turned upside down in order that the administration of our Navy may be brought more into line with that of the German Fleet.

In all clamour there lies serious danger. Every reform requires deliberate consideration. The machinery in itself is not so anachronous as is hysterically claimed.

There is probably no department of the Government which performs its multifarious duties with such excellent results as the Admiralty, and there seems every reason for hoping that Lord Selborne is determined to render this important branch of the service of the country better suited to the needs of the time. In his "Annual Statement" for 1902–3, the First Lord of the Admiralty indicated the lines upon which he proposes to work in moulding the old administration to suit the needs of the new Navy:—

"The Admiralty has been expanding concurrently with the general expansion of the Navy, and it is one of the most important duties of the Board to supervise this expansion, and to see that it takes place on sound lines. The dangers to be guarded against are excessive centralization, imperfect devolution of responsibility for details on subordinate officers, and the consequent overburthening of the higher officials, who ought to reserve their strength for the main direction of administration, the consideration of principles and improvements in the service. Most important of all, the development of the peace administration must be on such lines as to make for efficient war administration. The Board are keenly alive to the importance of this aspect of the question."

Efficiency. From all the official statements which have been made in the past year or so, and to a large extent from the achievements of the last few months, it is evident that there is a new spirit pervading Whitehall, and that its watchword is efficiency. The old spirit of conservatism and *laisser faire* is disappearing, and in the

naval administration we may recognize something of the alertness and pushfulness which, allied with due caution, must characterize all institutions, commercial and national, which are to withstand the fierce competition of the new century. The Admiralty are no longer asleep to the needs of the hour; it is recognized by the administrators of the Fleet that they are engaged in as keen a competition as the ironmasters, the shipbuilders and traders generally, and that efficiency will win the battle in the next war afloat, as it is daily winning in the contests of commerce. The nation has never before had such honest assurances—though official assurances do not stand for much as a rule—as have fallen from Lord Selborne and from Mr. Arnold-Forster in the past few months. They have abandoned the old cry, "All's well," and admit that there is room for improvement. They have set forth their ideals, and seek to be judged by the standard of efficiency that they have nailed to the mast. Mr. Arnold-Forster has shown that a reformer can do good work as an administrator, when, as in his case, the wish for improvement is founded on a deep and careful study of the machine it is desired to render more efficient. Speaking in the House of Commons,* he said:—

"I am confident that the spirit which should amimate, and does animate, the Board of the Admiralty with regard to the preparation of the Fleet for sea may be expressed in one phrase, which is the preparation of the Fleet for

* February 21st, 1902.

war. The Navy has no other *raison d'être* at all except as an instrument to be used in war. I think that any one who touches upon even the fringe of the administration of that great service must feel haunted by the idea that all this will be tested one day. When the guns are shotted and the war-heads are on the torpedoes, when the sound of firing is heard in the Channel and losses are reported, and when men's hearts fail them, that is the time when all this will be tested; and I do truly believe that that is the conviction which is in the mind of every man who is concerned in the administration of the Admiralty. If it were not so, I am sure we might feel hopeless enough as to the safety of this country in time of war.

"I do not pretend for a moment that the ideal of which we are all in pursuit, and which we shall never attain, has even been approached as nearly as some may imagine. In a Navy like ours, where all has grown up by degrees, where many appliances must remain which were appropriate to the day in which they were created but are less appropriate to the day to which they have survived, there must always be a certain proportion of our *matériel*, a certain number of our appliances, which are not what we should desire them to be. But I believe that by pruning, as we have been pruning on an almost unparalleled scale, the unprofitable elements of our Fleet, by practising perpetually in peace those things which must be done in time of war, by appointing those officers to commands in peace who will have to exercise authority in time of war, and by appealing on every occasion when we feel we are not strong enough to that ready support of the country which, I know, we shall always receive, we shall be doing all we possibly can to prepare

the Fleet for that day of trial which we hope will never come, but which we all feel will be fateful and critical to us when it does come."

These are the words of a war minister who deserves confidence, and not of a mere politician. In the past there has been a feeling that the Admiralty were unconscious of the great issues depending on their every act. A new spirit is at Whitehall. It is at last realized that the Fleet exists for war. Hitherto this has been frequently overlooked. The responsibility is at last recognized, and we may confidently look for its fruits. But behind the Admiralty stands the Treasury. In times past it has been the Navy's greatest enemy, petting it in time of danger, and starving it when wise expenditure meant the truest economy.

Economy.

True economy in a policy of British national defence lies, not in the meagre provision of ships and men, equipment and stores, but in such provision as leaves the world in no doubt as to the intention of the British people to maintain their supremacy at all costs. Economy also demands that for every pound spent a pound's value shall be obtained. Are we getting good return for our money? In some degree the answer must be in the affirmative, but there are reservations: our construction is becoming increasingly expensive because dilatory, and the organization and training for war is imperfect. Mr. Asquith is one of the statesmen to-day who appear to have a correct appreciation of the attitude which the nation should

assume towards expenditure for its defence by sea. Speaking in the House of Commons, Mr. Asquith* said—

"I quite agree that as regards naval expenditure it is the duty of this House to scrutinize it with the most careful watchfulness. We ought to see that we get full value for every pound, and, if possible, for every penny we spend. We ought to take all the precautions this House can take, or induce the Executive to take, to avoid improvident contracts, to use the best possible material, to employ the most skilful labour, and to secure the most watchful and the most competent supervision. But, when you have done that, it appears to me that the large question of policy which the House has to consider is the question, What are the needs of the Empire? how they are to be met: not by jerky, occasional spasmodic efforts, but by a constant and continuous policy."

The only means by which Great Britain can hope to effect a saving in the outlay upon her Fleet is by impressing competitive sea Powers with a due appreciation of her fixed determination to maintain her historic *rôle*. Our highest interest is peace. When the famous Conference assembled at the Hague, high hopes were raised that it might result in easing the burden which presses so heavily upon all Europe, but in no country, be it noted, less than on Great Britain. We have never encouraged bloated armaments ashore or afloat. On more than one occasion, owing to the blindness of our rulers, we have run the risk of losing that supremacy on the seas which we inherited from our forefathers.

* February 21st, 1902.

For twenty years past we have merely followed the lead, first of France, then of Russia, and now, to a very slight extent, of Germany and the United States as well. The first move towards increased expenditure has always come from without, and not from within these islands. Twenty years ago we had only two competitors for sea-power; now there are four, excluding Japan and Italy.

A challenge to peace.

When the more serious rivals show any inclination to abandon their present attempt to rob us of our birthright and our only sure defence, then, and not till then, can we contemplate any reduction in our expenditure on the Fleet. This attitude was clearly expounded by Mr. (now Viscount) Goschen in introducing the Estimates on November 9th, 1899. The Peace Conference had assembled, and the First Lord of the Admiralty told the world—

"We have been compelled to increase our expenditure as other nations have increased theirs, not taking the lead, not pressing on more than they. As they have increased, so have we increased. I have now to state, on behalf of Her Majesty's Government, that similarly, if the other great naval Powers should be prepared to diminish their programme of shipbuilding, we should be prepared on our side to meet such a procedure by modifying ours."

This was a declaration which held good in that year of blighted hopes, and it will hold good for to-day and for all time. None of the Powers accepted the challenge of peace, and the naval expenditure of

the world has continued to increase, not because this country has any desire for conquest, but because Europe has not yet been convinced that the British people are serious in their resolve to permit no Power, or probable combination of Powers, to build up such naval armaments as could menace our trade and our Empire.

The Navy is England's all in all, and true economy lies in a bold official declaration rather than in a piecemeal and spasmodic expenditure. At present our shipbuilding programme is barely keeping pace with that of the next two Powers. Germany is laying down two battleships and an armoured cruiser in the coming year; Russia will begin one battleship, and five others are projected; and France is committed* to a programme of four more battleships (two were laid down last year) and five armoured cruisers. Though much progress is not likely to be made with more than three of these French ships in the year 1902, the same is true of the British programme of two battleships and two armoured cruisers, which will not be commenced until next spring.

One bold measure might show the other naval Powers the fixed resolve of this country, and it might be accompanied by a promise to Europe that as rivals reduce their outlay, so we will reduce ours. Lord Goschen's declaration might well be repeated, and in a manner as significant as can be devised. Such a message, backed up by an adequate programme of shipbuilding, and accompanied by measures for improving the organization of the Fleet for war, would assuredly

* By Vote in the Chamber of Deputies, March 9th, 1902.

do much to correct the evident belief of some rival Powers that they can wear down the resistance of this country to their aspirations. The present policy of merely keeping pace with two great navies is a policy of extravagance, a rivalry that imposes on the people of Europe a burden of taxation which is not essential. Let business-like preparations be accompanied by an understanding between the Mother Country and her Colonies, and the day may not be far distant when we shall feel the burden of our Empire less heavy upon us.

After a naval war has begun it will be too late to attempt to mould our organization. We shall not be able to repair errors of preparation after the Fleet has met with reverses, as we have done, to some extent, in South Africa. "*Si vis pacem para bellum*" is the motto of Whale Island, the great gunnery-training establishment at Portsmouth. It should be the motto of the Admiralty and of the Fleet, and the nation should see that it is acted upon; that the naval defence of the Empire is adequate; that responsibility is not dispersed until it rests with no one in particular, but is actual and direct; that "paint and polish" is not the path to promotion, and that the Fleet becomes a serious weapon with only one object—the preservation of peace by the preparation for war.

Great Britain must assuredly stand true to the destiny marked out for her by hundreds of years of effort and sacrifice and suffering. Nelson did not win Trafalgar that we should risk the hard-earned spoils of his victory.

ARCHIBALD S. HURD.

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UNIV. OF CALIFORNIA

NAVAL EFFICIENCY

THE WAR-READINESS OF THE FLEET

CHAPTER I

THE NAVY AND THE NATION

WANTED: A POLICY OF DEFENCE

A system of circumlocution.

LORD SALISBURY has stated that "the defence of the country is not the business of the War Office or of the Government, but the business of the people themselves."* Had the Prime Minister been referring specially to the Navy, he would have disclaimed responsibility in similar terms. Broadly, the statement is true. We have two departments whose affair it is to arrange for the safety of the Empire under any probable combination of circumstances. They have at their head two civilian Ministers who possess little or no technical knowledge. These two Ministers are responsible to the Government of the day, which knows less even than they do of the vital questions of Imperial Defence. In its turn the Government is responsible to the House of Commons, which neither knows nor

* May 9th, 1900.

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professes to know anything about the Navy or Army; in the absence of personal recriminations or the scent of a political job, members do not even sit through the debates on service questions. When Mr. Arnold-Forster gave his most interesting and important explanation of Estimates for over £31,000,000 in February last, only about one-sixth of the House was present. The members of the House of Commons represent, and are responsible to, the nation, of whom not five per cent. under the present conditions worry themselves about the state of those defences on which each one of them depends for his daily bread and the means whereby he may employ himself to advantage.

Behind all this wonderful machinery of representative and really irresponsible Government we have the First Sea Lord and his colleagues, Admirals all of them, at the Admiralty, and the Commander-in-Chief and his Staff at the War Office. These are the men who do know whether the country is safe, but they are not allowed to tell. Their lives have been devoted to the study of military matters, either afloat or ashore. If the Cabinet Minister at the head of either department asks for advice it is their duty to give it. There the responsibility of the technical advisers ends. If their counsel is not sought, they are under no obligation to tender it. If it is offered, the First Lord or Secretary of State for War, as the case may be, is not bound to follow it, and in practice he frequently ignores it. Even when their opinions are flouted, the technical advisers of the Government are not held to be under

obligation to resign, and they are not permitted to tell those for whom indirectly they act, the mass of the people, that national interests are being sacrificed to party or Government apathy. So that the conclusion of the whole matter is, that the defence of the country is the business of the people, but that they are not allowed to have the facts, without which judgment is practically impossible. Between them and those who are the trusted guardians of their welfare is erected a series of screens which are not merely blank, or even opaque, but on which imaginary cinematograph pictures are from time to time exhibited to divert attention from those hidden defects which are either carelessly overlooked or wilfully ignored by those in authority. Debates are raised, facts are coloured, figures are played with adroitly, and the nation's interest subsides.

Would the public know the truth about the Navy or the Army, they must get behind (1) the members of the House of Commons and (2) the Government, and (3) dodge the Ministers of Defence; then, and then only, will they reach (4) the men who know, to discover that they are tongue-tied, dumb, and that their public utterance on departmental matters is regarded as little less than a scandal. Nor is this the complete story. That can be found in the report of the Hartington Commission, which is as topical to-day as when it was penned. It is the British method to appoint committees to investigate, and then forget to carry out their recommendations. It is the sure means by which,

not one Government only, but every Government, endeavours to tide over a period of popular demand for reform. It is a system consecrated by years of observance.

The people's Navy.

Lord Salisbury stated a bare fact: the defence of the country is the business of the people themselves. The people have only themselves to thank for the Navy and the Army, particularly the Navy. The maintenance of the two services has not been due to the carefully planned system of devoluted authority and responsibility, but to the million-headed, often ignorant, civilian population. But this is not the whole truth. We owe the strength of our marine forces in particular to a series of panics engineered by a handful of persons. One may count on the fingers of one hand those who have been mainly responsible for giving the Empire its Navy. And among them is not a single Cabinet Minister, though Viscount Goschen was a willing instrument of the nation's will. In the first instance, there is a man with an idea that all is not well with the Fleet. He gathers round him, may be, four or five others. A few letters to the Press and two or three public meetings, and a train is laid for a popular explosion. At first the Political Lord of the Admiralty will prevaricate, as Lord Northbrook and Lord George Hamilton did in the eighties. Then he will admit that there may be reason for inquiry. Finally, he will give way, and will introduce a measure for strengthening the Fleet. It may be a good measure or a bad measure, but if it means the

expenditure of several millions the nation is satisfied. Is this picture overdrawn? The stories of the movements in 1884, in 1888, in 1893, and other years, for the augmentation of the Fleet confirm every detail. The Army may not reveal such well-marked causes for its expansion. It is ashore, it is in our midst, the man in the street rubs shoulders with officers and men, and he is continually reminded of the debt he owes to those who wear His Majesty's uniform, horse and foot. The Fleet he seldom sees. More than three-quarters of the population of Great Britain have never seen a man-of-war, not a hundred thousand probably have stepped on board a battleship or cruiser.

Cost of Navy and Army.

There is a tradition that Britannia rules the waves, and every man has faith that the legend is still true. He vaguely appreciates the function of the Fleet, but he has a far greater opinion of the importance of the Army. Consequently, when there has been money to be spent, the Governments, which are very human in their weaknesses, have devoted most of it to the service ashore—the popular service—and they have had their reward. They have given us the most expensive Army in the world, and for nearly a century have neglected the Navy.

Practically, throughout the nineteenth century the land forces absorbed annually from three to five millions more than was expended on the Navy, until this proportion came to be regarded as normal and proper, and reflected popular opinion, presumably, or at least Government opinion, on the relative importance of the

two branches. Figures are dull reading, but those who desire details may turn to official returns, the Parliamentary paper of "Public Income and Expenditure," No. 336 (1) of Session 1869, which sets out the cost of the services from 1688 to 1869, and later documents of the same type which have been issued by the Treasury. Until 1895, Lord Spencer's last year at the Admiralty, the provision for the Army always exceeded, sometimes by large amounts, that made for the sister service (see Diagram, facing p. 10). Successive Estimates support the contention that the land forces were considered of primary urgency, since, in the ten years ending in March, 1895, £178,045,000 was set aside for their maintenance, whereas, the sum for the older arm, inclusive of the money spent in designing and building ships, in purchasing fuel, in making big guns and ammunition, and in carrying on a survey service over the Seven Seas, was only £145,770,000, an excess for the Army of £32,275,000, or an average of £3,227,500 annually.

This is the manner in which the country has indicated to the world its recognition of the indispensability of its sea supremacy. The outlay on the Navy has frequently fallen below that of France alone, and it was not until press and public gave the Government no rest that the provision for the Empire's "only defence" was increased. Only in the past few years have the two forces changed places, and even in the four years preceding the outbreak of the war in South Africa the relative positions, as judged by the monetary provision,

did not point to any general recognition of the fact that the Navy is and must be the right arm of a nation which stands isolated by the seas from possible enemies, which receives its very food in ships open to attack at any moment, and whose communication with its daughter-lands, east, south, and west, depends on the same principle—the maintenance of the Fleet. Queen Anne is dead, but the words addressed to her by the House of Lords, nearly two hundred years ago, are still living truths—

"It is a most undoubted maxim, that the honour, security, and wealth of the Kingdom does depend upon the protection and encouragement of trade, and the improving and right encouraging its Naval strength . . . therefore, we do in the most earnest manner beseech your Majesty that the sea affairs may always be your first and most peculiar care."

Both political parties at fault.

Glancing back over sixty-five years at the Admiralty, during which he had many opportunities of following closely the inner workings of successive administrations, Sir John Briggs, in the introduction of his reminiscences, states: *

"Many First Lords have used their best endeavours with the Cabinet, and more particularly with the Chancellor of the Exchequer, to obtain increased grants for the Navy, with a view to augment it and to increase its general efficiency; but they, alas! failed in their laudable attempts. Political considerations and financial difficulties were invariably advanced as the grounds of refusal, and a favourite

* "Naval Administrations," 1827–1892.

phrase with all Cabinets was 'The moment is really so inopportune.' No moment ever was opportune to grant money for the Navy previous to the administration of Lord George Hamilton. I have reason to believe that this was especially the case with the Duke of Somerset, who, during his seven years of naval administration, had had so many and urgent representations in regard to the inadequacy of the Fleet from his naval advisers that he, in consequence, frequently brought this important subject before the notice of the Cabinet. His Grace's pertinacity in requesting financial assistance practically led, upon a change of administration, to Mr. Gladstone filling the office his Grace had held for that protracted period with the junior member of his own Board."

What Mr. Childers did for the Fleet and the naval administration is notorious. He set about reforms madly at the desire of a Cabinet which was desirous of economy at any cost, and these so-called reforms led to a subsequent heavy burden on the nation. Both parties in the State have been at fault. Lord Beaconsfield vied with Mr. Gladstone in his contempt for "bloated armaments," and the strongly expressed views of the naval experts were consistently disregarded. Patriotism and the security of the Empire were reckoned small matters so long as the Administration could keep down the taxes. In all the years of Parliamentary Government down to 1889, the real needs of the Fleet were invariably disregarded, and political exigencies alone fixed the sum that should be devoted to the maintenance of that supreme command of the seas for which Nelson laid down his life.

Fixing the Estimates.

In this connection it is interesting to turn over the pages of the Hartington Commission, and to read again, also, the synopsis of the evidence given before the House of Commons Committee on the Navy Estimates in 1888. The witnesses revealed that the Cabinet year by year fixed the sum that could be devoted to defence, and then the two Ministers divided it between them with little or no reference to the real needs of their respective departments. Lord George Hamilton confessed that in the preparation of the annual estimates

> "the first step that governs the whole proceedings is the determination by the Minister at the head of the Department, as representing the Cabinet, of the amount of money to be spent;" and he added, "the responsibility of the other members of the board for the extent of the shipbuilding to be undertaken in the year must be held as subject to this condition."

At the same time, two of the Naval Lords, Admiral Sir Arthur Hood (afterwards Lord Hood of Avalon), and Admiral (now Sir Charles) Hotham stated that they were not satisfied with the provision made then for the Fleet. Their colleague, Sir Anthony Hoskings, also gave evidence, but preferred to express no definite opinion on the adequacy of the Fleet, yet he was jointly responsible, in a sense, for its well-being. In 1884, when the inadequate programme of that year was introduced by Lord Northbrook, Admiral Cooper Key, the First Sea Lord, wrote in a letter to Sir Geoffrey Hornby—

"If you had seen what I have written, heard what I have said at the Board, you would know how I have been disturbed about the absurdly small sum the Government are asking for. . . . I have scarcely slept for the last five nights, having been so worried about it."

The Admiral did not resign, because not he, but the politician, was really responsible under the system existing then as now.

A famous panic.

The *Times* has described in effective summary the events which occurred in the year after Sir Cooper Key's nights of sleeplessness on account of the inadequacy of the Navy: "In the spring of 1885 the country was suddenly brought face to face with the prospect of a war with Russia. We all recollect what happened. Mr. Gladstone asked for a Vote of Credit of £11,000,000, of which six and a half millions were required and demanded for 'special preparations.' In presenting this Vote to the House of Commons Mr. Gladstone said: 'It is not a case of war. There is no war before us, actual or, I may even say, proximate. . . . What we present to you is a case for preparation. Is there, or is there not, any case for preparation?' Already the country was excited and alarmed. The Vote of Credit, announced on April 21, was passed on April 27, but on March 26 the Reserves had been called out. On April 9 there was something like a panic in the City, when Russian stocks fell ten points, Egyptians six, and our own Consols two. On April 13 a great meeting was held in London to consider the state of the Navy, and a resolution urging the Government to take

immediate steps in regard to it was moved by the present Lord Aldenham, and seconded by the late Mr. W. H. Smith, who had been First Lord of the Admiralty in the preceding Government of Lord Beaconsfield. Measures of naval preparation were initiated in all parts of the world, and such ships as were available were hastily mobilized and commissioned at home. A Fleet, respectable in appearance, but deplorably heterogeneous in composition, was assembled at Portland, and, no doubt, had it been called upon to fight, it would have fought in a manner worthy of the best traditions of the British Navy. But when the scare died down, and the Fleet was ordered to carry out the first series of modern naval manœuvres, it was found to be, and was acknowledged to be, as Admiral Colomb records in his 'Life of Sir Cooper Key,' a 'menagerie of unruly and curiously assorted ships.' The country had so long forgotten the conditions and requirements of sea-power, its rulers had been so long accustomed to adjust their Navy Estimates to the convenience of the Chancellor of the Exchequer, and not to the imperative needs of maritime defence, that when the prospect of war came suddenly upon us, all was confusion, anxiety, and alarm."

The nation's awakening.

An improvement in the provision for the Fleet came in 1889, but no one who is acquainted with the history of the previous year, of the widespread agitation and the urgent demands by the public for a strong fleet, will accord Lord George Hamilton or the Cabinet of that day any large measure of praise for the passing of the

Naval Defence Act. This legislation was forced upon the Government by outside influences, and its introduction was well in accord with traditional policy; the political exigencies of the party in power demanded that it should carry out the nation's will, and it capitulated, with what grace those who will read the whole story, from the famous memorandum by Lord Charles Beresford on our naval deficiencies to the final surrender of the Cabinet, can best appreciate. But it may be urged that all this has been changed. The sober fact is that the Navy has not been neglected because in view of the awakening of the public, Cabinets have not dared to make sport of the nation's security to the same extent as in former years. Every augmentation of the Fleet has been forced upon successive Governments. But for the agitations that occurred in Mr. Gladstone's last period of office, would that opponent of great naval expenditure have agreed to the large Votes introduced by Lord Spencer? So long as the public were satisfied with the millions devoted to this country's land forces, the real needs of the Navy were ignored. The nation made the Fleet what it is to-day, and when it ceases to take a pride in its achievement there is no guarantee that politicians will be sufficiently patriotic to endeavour to set them again on the right, the only road. The more carefully the history of naval administration for the past hundred years is studied the less is one encouraged to believe in the honest love of country of those who have hitherto directed the affairs of the Empire; either this, or else they must be found guilty of

the most culpable ignorance of the principles of defence. Each year a certain sum has been set aside for the two services, and the Navy and the Army, the latter backed by the most powerful influences, have been left to fight out the method of distribution, with results that the figures already quoted clearly indicate. If the nation desires to have a Fleet sufficient and efficient, it must say so, not once or twice, but repeatedly, in season and out of season, and it must refuse a hearing to those who would preach economy where to economize is treason to our island story and its makers.

General Maurice, C.B.,* has pointed out—

"Gaseous froth."

"It is said with truth that no matter how powerful a Ministry may be, it cannot initiate a great policy for which public opinion is not prepared. Yet public opinion habitually awaits the leadership of the very men who are afraid to speak out lest they should find that public opinion is against them. A great Empire which is thus for ever, like the army led by Sir Richard Strachan and Lord Chatham, kept back from definite action because there is no one who both can and will guide its course, stands at serious initial disadvantage as compared with 'Empires' of another pattern. What I want to insist on is this, as the great primal factor in dealing with this question of National Defence, we must face the fact that the talk about 'Ministerial responsibility'—in so far as that is to be understood to mean that members of a British Cabinet, or the Cabinet as a whole, will undertake or dream of undertaking what they know to be necessary for the defence of the Empire, except in so far as the public at large has

* "National Defence."

been roused to realize what that is—is sheer unmitigated gaseous froth, mere noise portending nothing. A British Cabinet cannot by the very nature of our party system do this or anything like this."

It is thus that we come to the ominous—or should it be ridiculous?—*cul-de-sac*, that the public are not allowed to know when the provision for defence is inadequate; and yet on them, and them only, lies the burden of safeguarding the Empire and themselves.

Undue prominence of the Army.

Even Englishmen who give thought to the defence of their country regard the sea and land forces as of parallel importance, but they have a tender place in their hearts, and unloosen their purse-strings more willingly to meet the demands of a Secretary of State for War than those of a First Lord of the Admiralty. Everything tends to exaggerate the priority of the profession of the land soldier. The Army is officered by peers and members of great families, and its interests are committed to the care, not of a Minister bearing a distinctive title, but of a Secretary of State for War—not, be it noted, for the Army only. The Commander-in-Chief invariably sits in the House of Lords. The Navy, on the other hand, is officered by younger sons and the children of the country rectory and of professional men, and their interests are in the hands, not of a Secretary of State, but of a Minister who, if he would make a recommendation to the Sovereign for the conference of any honour on one of the officers of his force, must do so through his colleague at the War Office. There is no Commander-in-Chief of the Navy.

The First Naval Lord does not sit in the House of Lords; in the eyes of the nation he never figures. The head of the Army moves abroad, speaks here, there, and everywhere, usually indulging in platitudes, it is true; he is one of the country's figure-heads. The head of the Navy is a commoner; he works on year in and year out in his office; he is seldom seen on public occasions; he is a silent man, the nation hardly realizes his existence, and most persons do not know his name. Under these circumstances is it surprising that whenever the two services are mentioned in the newspapers, it is almost invariably "the Army and Navy," that this is the phrase most frequently seen on the toast-list, and that the average man in conversation places them almost unconsciously in this order, radically false as it is?

Bricks and mortar.

The Navy is the essential force, it is the oldest force, and it is the cheapest force. In our scheme of defence the Army frequently, if not invariably, is given pride of place, pride of royal favour, pride of expenditure, pride of national esteem. Politicians talk airily of "our First Line of Defence," of its importance to the Imperial fabric, but they do not take the trouble to familiarize themselves with its duties. Many of them plume themselves that they are something of army experts. Retired officers of the Army sit in the House of Commons and keep their arm to the fore, while the Navy is silent, and has hardly a single representative. Without thought of a concrete scheme of defence, our legislators would place guns at every conceivable

point on our coast, and at points where they can command the great trunk roads, or maybe command nothing. This appeals to Parliament as a wise, statesmanlike policy. There is something for the country's money which every voter can see for himself. This scheme of setting up bricks and mortar and guns away from our shores has led us into an expenditure of nearly three millions sterling since 1897. The average M.P. would probably gasp if he were told that, apart from reasonable coast defences, his guns and masonry are a waste of money. They are more than this; they are a positive danger to vote-catching politicians and to those they profess to lead. They give them and their constituents a feeling of confidence that has no sure foundation. They are a delusion and a snare.

Rational defence.

At this point it may be well to set out the only rational system of defence. First, the Navy must hold the seas in absolute command, and therefore on war occurring our defensive policy becomes necessarily offensive. For the protection of our shores, for the safeguarding of our colonies, and for the well-being of our oversea commerce, the Fleet must make the coast-line of the enemy its base of operations as soon as trouble threatens. Our ships must be off the enemy's ports, watching his movements, and, if possible—that it is possible is not certain—maintaining a strict blockade. This should be as effective as the well-wired cork of a champagne bottle, so covering up all means of egress that no stragglers can escape. It may be that this will be beyond the power of our Admiralissimo

in these days of steam and torpedo craft, but that is the ideal to which we must at least strive to attain. If such a blockade is effected, the seas remain free to commerce, our food-supply will not be in danger, the raw materials for our factories can still be poured into the country, the ore for armour can be imported, and all our industries can continue unimpaired. As Napoleon has remarked—

"The only way to prevent the Continental Powers from bridling you is for England to proceed in her proper sphere as an insular power, possessing the command of the sea. . . . Your marine is the real force of your country, and one which, while you preserve it, will always render you powerful."

This is the model of British Marine Defence. In case it partially fails, we must have cruisers to fall on any of the enemy's corsairs; torpedo-boat destroyers—supported by adequate coast defences—to frustrate raids on important ports where docks and stores may be in danger. It must be evident that the Navy is not merely our first line of defence, but our only line of defence. Admiral Sir William King-Hall once pertinently remarked that "the Navy is the first line of defence, the second line of defence, the third line of defence;" and Wellington's excuse for expensive shore fortifications was that "we have no defence or hope of defence except in the Fleet," and he feared it was unequal to its task. The Navy cannot carry war into inland territories: that is its limitation, and that is

why we need an Army, small and efficient, for duty in India, and to some extent in Canada and Africa, where we have land frontiers to protect. But until the Fleet has secured command of the sea, no military expedition can safely leave our shores, and until it has lost that command no enemy's soldiers can move against us in these islands. So long as the supremacy of the seas is open to doubt, neither side in a conflict will risk the transport of an armed force for the purpose of carrying out an invasion, because the lines of communication would be open to destruction the moment the fleet of the opposing nation came to the point of disembarkation. All history confirms this view from the time of the great Anglo-Dutch wars down to the most recent conflicts between China and Japan, and America and Spain.

The seas as British territory.

Sea-power is the essential power. Had we the German army it would be useless except we had also a supreme Navy. In some degree this is true of Germany in respect to its "all-world policy." The German Emperor has recognized the fact. Lord Salisbury effectually opened His Majesty's eyes by commissioning the Special Service Squadron on the occasion of the famous telegram to the Transvaal Republic. The Kaiser could make no reply had he desired to do so, because he had no navy that he could oppose to ours. What is true of Germany in a limited degree is a wide-spreading, all-absorbing principle to a nation situated geographically as we are, shut in by the ocean on every hand. The Seven Seas are often

referred to as the paths of our Empire. They must be more than that; they must be our territory, dominated by us in time of war, or the whole Imperial structure—the great oversea commerce that has been built up in past centuries—must fall away from us. As long as we can hold the enemy to his bases we have nothing to fear. We have no land frontiers save in India and in Canada and Africa. We gained these possessions by sea-power, as we lost the United States by the lack of it. The frontiers of Africa, Canada, and India, and all the sea frontiers, can be effectively protected only while we have that control of the sea which is the only guarantee for the safe movement of troops and the foundation of a world-wide empire.

False lessons from South Africa.

For two and a half years past we have been fighting a campaign seven thousand miles from our base for all supplies, and the daily receipt of news of the achievements and failures of our arms has given to the Army and its mission an undue prominence. The essential principles upon which the Empire must be safe-guarded seem to have been forgotten in the cry for a better organization of the military land service in all its departments, and a more thorough training for officers and men. From opinions which have been expressed by leaders of national thought and action, from the Premier downward, it might be inferred that our main and only defence lay in the Army and in civilian riflemen. It might be assumed that if Lord Salisbury could see every able-bodied man equipped with a rifle, and able to shoot straight, he would be

quite satisfied that the Empire was secure. The Prime Minister seems to have caught the prevailing ideas on defence, though he is no reader of newspapers, and does not mix with his fellows of high or low estate. We have seen the mission of the Army exaggerated to a point at which the exaggeration has become a grave danger. We must have an army because we have an empire; but that army, however great in numbers it may be, however complete its equipment, however perfect its organization, however well trained its officers and men, will avail the nation nothing if it is not secured and rendered effective by our traditional command of the seas. When our naval supremacy is gone, no men-in-arms lining our coasts, no massive forts, nor any practicable system of mere coast or trunk-road defence, can rescue our honour.

Recognition of a good bargain.

These facts must be patent; they are superficial; they can be blinked only by those who will not see. Yet in this coming year we are devoting to land forces practically the same amount as is set aside for the maintenance of our supremacy afloat. Year by year the House of Commons by its monetary provisions for the defence of the Empire belies its claim to any appreciation of the only basis on which the well-being and solidarity of the Empire can be promoted. It even forfeits its claim to a recognition of a good bargain, for assuredly the nation gets better value for every pound spent on the Fleet than for twice that amount which is expended on the Army. The Navy, in spite of its ship-designing and construction, its great dockyards with

25,000 mechanics, its squadrons in all parts of the world, its 122,000 officers and men, its great expenditure on coal and sea-stores, its reserves of ships and men at home, has cost, as a rule, less than our small army; it is administered far more economically, and the work is better performed. These facts have been set out in Parliamentary papers; speakers like Lord Charles Beresford, Mr. Arnold-Forster, and others, have tried to drive them home, but still the country continues on its unthinking way. The Navy is starved; the standard of strength is cut down to a dangerous degree, and in these times of revolt against our military disorganization we are apt to lose sight of the old central fact that the "Navy is England's all in all," and that on it, under the good providence of God, we must depend for our wealth, peace, and security. These are old sayings, so familiar that they seem not to carry conviction. Unless we awake to their meaning we are in danger, not of checks or reverses, but of disaster.

Meaning of defeat.

Do those who protest against an expenditure of 12*s.* 9*d.* per head of the population upon the naval forces of the Empire realize what a defeat in the English Channel would mean? Three of the greatest Admirals of our time—Sir William M. Dowell, Sir R. Vesey Hamilton, and Sir Frederick Richards—have written * not unofficially, but with all the weight of their positions and experience:—

"It would, in our opinion, be far more in consonance with the requirements of the nation, by the provision of an

* Report on the Naval Manœuvres, 1888.

adequate Fleet, to render invasion an impossibility than to enter into costly arrangements to meet an enemy on our shores (instead of destroying his 'Armadas' off our shores), for under the conditions in which it would be possible for a great Power to successfully invade England, nothing could avail her, as, the command of the sea once being lost, it would not require the landing of a single man upon her shores to bring her to an ignominious capitulation, for by her Navy she must stand or fall."

No one will ever forget the numbing shock when the telegrams from the Generals in South Africa, commencing, "I regret to report," told the nation in that black week in December, 1899, that our army had been defeated at three points. These events were seven thousand miles away. What would be the state of feeling in the country if it awoke one morning to read a message from the Admiral in command of the united Channel and Mediterranean Squadrons:—

"I regret to announce that the Fleet has met with a reverse; the Allies formed a powerful combination largely superior to us, and after a long engagement I was forced to withdraw my Fleet, greatly damaged. I was chased by the enemy, but managed to reach Plymouth to-night without further serious losses"!

Such a message would bring home to us the tragedy of neglecting our only line of defence. With an enemy in command of the Channel, if only temporarily, should we regard the "check" to the British Fleet with the same stolid, admirable composure that was exhibited on Christmas Eve two years since? Should

we then congratulate ourselves on the fact that we had spent those hundreds of millions on the Army when a hostile fleet ploughed the waters of the near seas, cut off the communications with the distant Empire, captured the ships carrying food to the population of these islands, and, if it did not mask an invasion, would be in a position to starve the country into a humiliating surrender? This is the meaning of a weak Navy. Let us see to it that it is strong; let us turn a deaf ear to those who would tell us that we have reached this or that standard, and rest satisfied with no standard which is below that of absolute safety for these islands and those far-off daughter lands which rely on us for protection.

Living on the past.

As a nation we are prone to live on the achievements of former times, to bask in the glories of the past. A few months back Lord Charles Beresford was asked to write an introduction to an admirable series of biographies of "Our Naval Heroes," and for the present generation he drew this lesson from the stories of these splendid sailors' fights for the supremacy of the seas—

"A country cannot live for ever on its ancient prestige. The lapse of years has made other nations forget our victories in the past—the high courage, resolute, daring, and superb strategy of our Naval Heroes. A strong Navy, of overwhelming force, is absolutely necessary for the maintenance of the Empire; and our duty to the country, ourselves, as well as to our bygone Naval Heroes, is to see that we worthily maintain our position as the First Naval

Power of the world. . . . If these old heroes could give us advice, they would tell us not to let the millions we have spent be wasted by again allowing the fleet to become obsolete, weak, and unprepared. Drake would warn us how the parsimony of Queen Bess nearly cost us our life as a nation. We have no right to depend upon men of the same stamp as Pellew (Lord Exmouth), Drake, the Hood family, Howe, St. Vincent, Nelson, and the other great leaders . . . being always able to pull us out of our difficulties. The Naval Heroes of the past would have expected the men of the present to play their part in insisting on the maintenance of an efficient fleet as the strongest bulwark for our gigantic Empire."

It is a curious fact that our system of defence has been handed down to us from the time of the Crimea, and the hasty impressions on the subject of national security then formed were confirmed in the popular imagination by the Franco-German War. With varying intensity of purpose we have been struggling to blow our small selves out like the frog of fame in the hope of rivalling the Continental Powers with their gigantic standing armies, built up by a system of conscription. It has always been the Army, and only very occasionally has the essential truth gone home, to quote the words of Lord Wolseley, that "as long as the Navy is weak, the Army cannot hold its own." We muddle along, without any system of control or responsibility or any defined policy of defence. Were the Fleet defeated in the present year, who would be held responsible? The Cabinet would deny responsibility, for Lord Salisbury has told us that defence is the

business of the people themselves. From the evidence of the witnesses before the Hartington Commission it is evident that the matter of fixing responsibility would rival a Chinese puzzle in its complexity and difficulty. Parliament has no responsibility. So long as it talks it does its sole duty, judged by modern standards. Consequently, as it was no one's business to insist on an adequate Fleet, the Navy almost throughout the whole of the last century was permitted to remain weak, and other Powers, seeing our carelessness and ignorance, entertained dreams of driving us off the seas. France, in particular, was for many years our equal afloat in the opinion of many competent authorities, and it was only the agitations of the eighties which saved us from a great war, the outcome of which would probably have been a humiliating surrender. The Navy to-day is still inadequate; yet this is the time when we are setting up a military system, with its army corps in great standing camps, when we are adding several millions to our military expenditure, when we are dragging as many men as possible to the rifle-butts, as though it were our ambition to rival placid Switzerland—when we are, in short, endeavouring to build up a miniature Continental Army, well knowing that we have not the men for the task, and that if we had them they would, on the authority of the late Commander-in-Chief, be practically useless so long as the Navy is not supreme and adequately prepared for war and for victory.

The road to safety.

The cry is for efficiency, but Parliament is far too

much occupied in regulating the parish pumps of these Kingdoms, and in discussing abstract motions which mean nothing to the nation, to find time to devote to the subject of national defence. When the Estimates are introduced, certain naval and military questions are talked upon in a hurried manner, and a *pot-pourri* of undigested opinions and criticisms is served up to the nation. Official assurances as thin as air are set forth, and there the matter rests. Serious and deliberate discussion on any vital principle is very rare, for the simple reason that members of Parliament do not understand defence, and do not want to do so, and the professional advisers of the Government are never heard. Yet a remedy would surely not be difficult to evolve. Let us take the Navy Estimates. In a constitutional country, with a representative system, the nominal responsibility of the civilian Minister must be maintained, but his position would not be seriously weakened if the Estimates which he proposes to Parliament were referred to a Select Committee, which would examine them side by side with those of the Army. The Committee would be informed of the amount that the Government considered should be devoted to the purposes of defence, and the method by which it had been divided between the two military services of the Empire —the Navy and the Army. It would be their duty to consider the reports of the professional members of the Naval and Military Boards on which the Estimates had been framed, and, if desirable, to interrogate the First Naval Lord, or the Commander-in-Chief, or any

of their departmental colleagues. The proceedings should be private, in the national interests, and since it is the desire of all statesmen that questions of defence shall be kept above party politics, both parties should be represented by those members possessing special knowledge, with only one of the parliamentary representatives of the dockyard towns. The Committee would have the fullest powers, would be bound to regard the proceedings as confidential, and would submit a short report to the House of Commons, setting forth their opinions on the adequacy of the provision for the two services. Most important of all, they would state whether the Estimates met with the approval of the technical members of the Naval and Military Boards, and how far they regarded any objections raised by those officers as valid. As an alternative scheme, the First Lord of the Admiralty, in laying his proposals before the House of Commons, and similarly the Secretary of State for War, should state whether they have the sanction of his professional advisers.

The duties of the Naval Lords.

It is the height of absurdity that we, practically alone among the nations of the world, should leave the destinies of the main line of defence in the uncontrolled hands of a civilian, who, as a rule, knows nothing of the subjects with which he deals. The nation should insist that the First Lord of the Admiralty should not arrogate to himself the duties of the First Naval Lord. Their functions are quite distinct. They were indicated admirably by the late Sir Geoffrey Hornby, who himself

at one time occupied the position of chief naval adviser at Whitehall. "It is for the politicians," declared this experienced sailor and administrator, "to tell me if they want the Channel defended or not: that is their business. They tell me that I have to defend the Channel, and I then say, 'Very well; to do that I shall require so many ships, so many guns, and so many men: that is my business.' Then they have a right to say, 'That is too much. We cannot afford it, and we will give up the idea of defending the Channel.' That, again, is their business. But they have no right whatever to say, 'You do not require that number of guns or ships, or men,' for that is not their business, and they know nothing about it."

Parliament, on behalf of the nation, either of itself or preferably speaking through a Committee, should see that the First Lord, the politician, does not meddle with the tactical and strategical questions which are not his concern, but are the business of the First Naval Lord, the Admiral. Efficiency demands some change in the present system, under which the Navy has been starved, for the most part, and then again, but very occasionally, gorged, with an utter disregard of national interests. Let us set up some scheme whereby it shall be impossible for the safety of the Empire to be endangered to serve the interests of party.

In order to prevent any misunderstanding of this chapter, in which the importance of the Navy has been insisted upon, it should be added that the country cannot afford to neglect the Army. It is necessary

also, but it should be evident that it cannot be regarded as of that primary importance which has been attached to it. It is, and must remain, small, but it may be efficient, well organized, equipped for war in every detail, and capable of expansion to meet an emergency. In the present year, when over £9,000,000 of the Navy Estimates is set aside for new ships, large sums are devoted to repairs of ships, to the development of the Royal Dockyards, and other purposes, and about £1,500,000 to coal for the Fleet, the Army, which has no such outlets for expenditure, is taking almost as much money as the Navy. Where does it go?

A politician's finger-post.

Mr. Asquith has pointed to us the road we should tread in the matter of national defence. He has said *—

"I saw the other day a statement, and I believe it to be true, that during the last financial year a sum of no less than 85 million pounds was expended in this country, and in the various dependencies of the Empire, upon our military and naval forces. Of that sum of 85 millions no less than 55 millions, or nearly two-thirds of the whole, was expended upon the Army. That is to me a very disquieting statement. Great Britain is not, and never can be, a great military power. The purposes for which we need an army are strictly defined and limited. We have to garrison India and our great dependencies. We need to have constantly in readiness here at home for any call that may be made upon it, a mobile, well-trained, and well-equipped force, that can be despatched at a moment's notice

* Edinburgh, November, 1901.

to any quarter of the globe. We need, further, for what is called home defence, not a large body, but a considerable body, of trained men, able to be moved about, to be called together, and to be moved about without friction or difficulty, and trained to ride and shoot. But when you have said that you have exhausted the military interest of the Empire, and I need not tell you that the notion that it is needful for us to maintain in this country a huge, unwieldy army, for the purposes of foreign invasion, is one of the idlest chimeras that ever entered into the brain of man. Why, if you once lost command of the sea, you would be starved into submission before a single foreign soldier had occasion to set his foot upon your shores. What is the moral? The moral, surely, is that, on the one hand, we should watch with the greatest vigilance and jealousy the growth of our military expenditure, and that, particularly after the revelations of the last two years, we should see that we get full value for our money. But, on the other hand, as the Navy is, and must continue to be, the main and ultimate safeguard both for our homes and for our commerce, any expenditure is both wise and economical which is needed for the maintenance of our command of the seas."

The Army cannot be the chief defence of the Empire; it must be secondary to the Navy, if the control of the Channel, preserved for two and a half centuries by Torrington, Russell, Hardy, Hawke, Boscawen, Calder, Cornwallis, and Nelson, is not to be wrested from us when the first naval war for a hundred years reveals all the hidden secrets of strategy and tactics under the new conditions which science has imposed.

CHAPTER II

THE FUNCTIONS OF THE NAVY

WHAT is the *rôle* of the Fleet in time of war? There is a fatal confusion of ideas as to the functions of the Navy and of the Army. They are quite distinct, though circumstances may render the co-operation of the two services not merely desirable, but essential. Many intelligent people regard the Fleet as a force for the direct defence of our shores. They are impressed, not by the influence of a Fleet in Being at some strategic point or points—it may be in the Mediterranean, in Far Eastern Seas, or even off the Land's End—but by the presence of isolated ships of war off important coast towns. This dangerous delusion is encouraged in times of peace by the allocation of so-called coast and port guardships to great commercial harbours. They may be seen at Queensferry, at Hull, Harwich, Portland, Southampton, Holyhead, Greenock, Bantry, Kingstown, and Berehaven. These vessels are regarded as necessary links in the scheme of home defence. It is more than probable that a great outcry would be raised were they withdrawn on the first signs of coming war. Yet this is what would happen. So

Complementary forces.

long as peace continues they serve as centres in the organization of the coastguard service, and may as well be moored at widely distributed anchorages as in the already overcrowded naval ports, and they are useful advertisements of the Fleet. But they have little or no warlike meaning as long as they remain dotted round the coast.

For coast defence single men-of-war are not fitted, are delusive, and are wasteful. As recently as the Spanish-American War we had an illustration of the danger which the existence of false opinions on the functions of a navy threaten. As soon as hostilities broke out, a clamour arose for ships to protect the long length of Atlantic coast-line of the United States, which imaginative and excitable persons stated to be open to bombardment. A panic distracted the Government of the Republic at a moment when its whole energies should have been directed to the "wiping out" of the Spanish Fleet. Representative bodies cannot disregard the unreasoning fears of those whom they represent, and therein lies a cause of peril. Before a storm of ignorant, fearful, nervous demands for ships for coast defence, a weak Government may bring such pressure to bear on their professional advisers as may ruin the whole plan of campaign.

Mobile and fixed defences.

Captain Mahan * has stated the matter very clearly—

"Coast defences and naval force," he points out, "are not interchangeable things; neither are they opponents

* "Lessons of the War with Spain."

one of the other, but complementary. The one is stationary, the other mobile; and however perfect in itself either may be, the other is necessary to its completeness. In different nations the relative consequence of the two may vary—in Great Britain, whose people are fed and their raw materials obtained from the outside world, the need for a fleet vastly exceeds that for coast defence. . . . In equal amounts, mobile defensive power is always, and under all conditions, more effective to the ends of war than stationary defensive power. Why, then, provide the latter? Because mobile power, whatever shape it may take, ships or men, is limited narrowly as to the weight it can bear; whereas stationary force, generally, being tied to the earth, is restricted in the same direction only by the ability of the designer to cope with the conditions. Given a firm foundation, which practically can always be had, and there is no limit to the amount of armour—mere defensive outfit—be it wood, stone, bricks, or iron, that you can erect upon it; neither is there any limit to the weight of guns, the offensive element, that the earth can bear; only they will be motionless guns.

"The power of a steam navy is practically unfettered; its ability to carry weight, whether guns or armour, is comparatively very small. Fortifications, on the contrary, have almost unbounded power to bear weight, whereas their power to move is *nil*; which again amounts to saying that, being chained, they can put forth offensive power only at arms' length, as it were. Thus stated, it is seen that these two elements of sea-power are in the strictest sense complementary, one possessing what the other has not; and that the difference is fundamental, essential, unchangeable, not accidental or temporary. . . . As seaports and all entrances from the sea are stationary, it follows naturally that the arrangements for their defence also

should, as a rule, be permanent and stationary, for as such they are strongest. Indeed, unless stationary, they are apt not to be permanent, as was conclusively shown in the late hostilities (the war against Spain), where all the new monitors, six in number, intended for coast defence were directed from that object and despatched to distant points, two going to Manilla, and stripping the Pacific Coast of protection so far as based upon them."

This is one of the essential vices of a system of coast defence dependent upon ships, even when constructed for the purpose; they are always liable to be withdrawn by an emergency, real or fancied. The moral of all this is simple. Never mount a gun on a ship if a weapon placed on shore can do the work as well. The former method is expensive and less reliable, because it is mobile, and therefore may be absent when it is wanted. Consequently Britain has abandoned for many years the building of ships purely for the purposes of coast defence, vessels unfit for work in an open seaway, and with inadequate supplies of coal, and therefore small radius of action. Referring again to the Spanish-American War, the late Admiral P. H. Colomb * may be quoted. In support of his contention that this country has no use for such men-of-war, he writes—

"When it came to the point, the most efficient of the United States' coast-defence ships were taken away from their coast-defence duties and thrust into Admiral Sampson's fleet. He seems to have found them fine instruments for

* "Naval Warfare."

hampering his movements, and of small use for those bombarding purposes that were their sole recommendation."

Navy not for local defence.

It is a first principle of naval defence that men-of-war should be used as little for purely local defence work as possible. That task can be done by fixed guns with torpedo and other small craft at less cost and more efficiently, leaving the Fleet free to fill its rightful *rôle* as the long right arm of the Empire, strong for offence, and therefore strong for defence. A little consideration will show that the effective offensive includes the lesser, the purely defensive. While the British Fleet commands the seas, the danger along the coasts of the British Isles is small, and does not warrant large expenditure. When the strength of the Navy has been permitted to fall below the standard of safety, absolute and unquestionable, then the need arises for the development of shore defence. On the other hand, it is conceivable that the Navy might have control of the seas in a measure, but yet leave it possible for small bodies of cruisers and torpedo-craft, or either, possibly single ships, to harry our shores, and cause much annoyance and inconvenience, if not actual damage, at important ports. This is one danger that must be guarded against. It is also possible that the enemy might be able to reach our bases, where reserve ships, stores, and docks would offer an overmastering temptation to a daring commander. In an hour, with luck, he might do incalculable harm, and when his task was accomplished such an officer would willingly accept

annihilation as the price. These are perils which are often greatly exaggerated, but they are real, and must be reckoned with.

Harbour protection.

Consequently the British Government have gradually evolved a scheme of coast and harbour defence, which is adequate in scope. Such naval bases as Sheerness on the Medway, Portsmouth, Portland, and Devonport, are sheltered behind submarine mines, booms of special construction across the sea entrances, and batteries of quick-firing guns commanding the waterways, with installations of searchlights of great power. Southampton also has its boom defence. At Portsmouth, Sheerness, and Devonport, in particular, these methods are supplemented by a ring of fortifications on the land sides of the towns, as protection against a flank attack by a force which might effect a landing at some unguarded part of the coast-line. At Dover three and a half millions are being expended on a series of breakwaters, enclosing an area of nearly a square mile, within which ships of war and torpedo-craft will be able to shelter under the guns mounted ashore. There they will be free from attack from torpedo-boats or submarines. A sum of £650,000 is being laid out on somewhat similar works at Portland, which is the rendezvous of the Reserve Squadron, and one of our most important stations for torpedo-craft. In 1897 over a million pounds sterling was set aside by the House of Commons for the defence of Berehaven, the headquarters of the Channel Squadron, Lough Swilly, and Falmouth, important strategical points, and the Scilly

and Channel Islands, which would be the bases from which torpedo-craft would operate in time of war. In the Bristol Channel, the Humber, the Tyne, and elsewhere, large sums have been spent in reasonable coast defences, as these are points which might conceivably be threatened by an enemy.

Cost of fixed defences.

Since 1895 this scheme of coast and harbour defence has been in hand, together with plans for improving the chief naval anchorages, and providing docks suitable for the great ships which have been built in recent years. The appended schedule gives brief details of the expenditure authorized since 1895 for (*a*) the strengthening of the coast defences of the British Isles, and (*b*) the deepening and improving of the harbours, and adding to the facilities for the repair of ships:—

(*a*) MILITARY WORKS ACTS.

	£	To be completed
Defence works	2,870,000	... —
NAVAL WORKS ACTS.		
Portland	700,000	... 1904
Dover	3,500,000	... 1908
	£7,070,000	

(*b*) NAVAL WORKS ACTS.

	£	To be completed
Deepening harbours and approaches ...	1,100,000	... —
Keyham (Devonport) dockyard extension	4,175,000	... 1906
Portsmouth docks	372,502	... completed.
„ widening caisson	40,469	... completed.
Pembroke jetty	130,000	... 1904
Haulbowline improvements	63,000	... 1902
Chatham dock	450,000	... 1904
Coaling facilities	1,000,000	... 1906
	£7,330,971	

The provision, under the Military Works Acts, includes the cost of sundry fortifications of more than doubtful utility, such as those with which London has been encircled. Also it is worthy of note that, in addition to the sums set out above for home dockyard improvements, a large expenditure has been incurred under successive Naval Estimates since 1895 for the same purpose, amounting in the aggregate to about a million and a half sterling. This has increased the total outlay in the past six years to nearly £16,000,000; the expenditure will probably exceed this sum when the various works are completed. As the result, all the great naval arsenals—Chatham, Sheerness, Portsmouth, Devonport, Pembroke, and Haulbowline—are being rendered better fitted to repel attack, and to shelter vessels disabled in battle, and to repair them; harbours of refuge and coaling-stations are being provided at Dover, and Portland, and such ports and strategical points of vantage as Southampton, Falmouth, the Channel and Scilly Isles, Berehaven, Lough Swilly, and a number of important waterways, and commercial harbours have been, or are being, protected, including the Thames (now defended by the most modern quick-firing guns), the Humber, the Tyne, the Solent, the Bristol Channel; and many other ports have been adequately safeguarded. These works are the background to an offensive-defensive naval policy. They tend to allay public anxiety in the temporary absence of the Fleet; other expenditure has been incurred to enable the Fleet to carry out its task efficiently, and to coal and refit with the least possible delay.

Under all the circumstances, as they must appeal to members of a representative assembly, it would be difficult to object to much of this defensive action, expensive as it is. It will be money well spent if it results in the acquiescence of the inhabitants of these Islands in the Fleet being left free to carry out its legitimate *rôle*, instead of being tied to nervous coast towns. Whether the public will be pleased or not, it is not the intention of the Lords of Admiralty to stultify their naval war policy. Adequate provision has been made to check "cross raiding," the earliest, as it is the least sensible, method of naval warfare, and for the rest the residents along the coast must have faith in the influence of a fleet at sea to check such ravages. The British Navy is for warfare in the open seas, and as soon as it is forced by vacillating Ministers or weak naval advisers of the Government to relinquish this essential hold on the great routes of the ocean, the Empire will lose cohesion, and must inevitably fall to pieces. So long as the control of the seas is maintained, not in theory only but as an actuality, all fears of invasion, or serious raiding, or the cutting off of supplies from over-seas, may be dismissed as idle. When that supremacy is bartered away, or allowed to disappear through carelessness, then no coast defences, no harbours of refuge, nor State granaries can save this country from a humiliating capitulation.

Offensive and defensive.

Let the function of the British Fleet, then, be properly understood and generously recognized by the most timorous and least statesmanlike among us. In

Object-lessons.

such a recognition lies the best guarantee of peace, and the only hope of security when war occurs. It was not by adding to the coastguard-ships, or patrolling our shores, that the Government of the day replied to the German Emperor's hasty telegram to President Kruger at the time of the Jameson Raid, but by the commissioning of a Special Service Squadron, which immediately took to the seas, ready, as Viscount Goschen explained, "to go anywhere or do anything." When the Fashoda crisis occurred, were the far-flung squadrons recalled from their patrols and spread out round our shores in case the French Government decided to attempt a landing at Dover or a raid in the Thames? At the first whisper of serious trouble in the autumn of 1898, our shores were defended by the Fleet taking the offensive. The Reserve Squadron rendezvoused at Portland, it is true, but the right arm of the Empire was bared at Gibraltar and Malta. At the Rock the Channel Squadron assembled in all its might, filled with coal, and then (characteristically British this) officers and men played golf and football while the world wondered if the two greatest naval powers would come to blows. Simultaneously the Mediterranean Squadron hurriedly returned to Malta, and officers and men, when their ships' bunkers had been filled, and all was ready, also turned to sports and drills with light hearts.

Tested and found wanting.

It is frequently stated that since Trafalgar the British Fleet has not been put to the supreme test of an action at sea—that is, it has been untried since the

creation of the ironclad, the introduction of steam, and the invention of modern guns. Its ability to perform the duties that will devolve upon it in case of hostilities, it is alleged, has not been tried. In a sense this is true. It is, however, frequently forgotten that the Admiralty on one occasion set up its own court, and suffered the severest condemnation. In 1888, owing primarily to the action of Lord Charles Beresford in resigning his seat on the Board, the nation had grown nervous, and there was a widespread feeling that all was not well with the Fleet. Other officers had thrown themselves into the great national cause: Sir Geoffrey Hornby, Sir Thomas Symonds, Lord John Hay, Sir Edward Fanshawe, Admiral Colomb, Sir Houston Stewart, Sir George Elliot, the present Admiral Fitzgerald, and others. Sir William Hewitt and Admiral the Hon. Sir Edmund Fremantle, had exhibited the weakness of the Home force of the Navy in the manœuvres of 1887: a force deficient in coal-capacity and speed, and weak in gun power, while alarmingly deficient in numbers. No official notice was paid to these deficiencies, but in the following year the authorities were apparently determined to show the public how ill-founded was their anxiety. As large a force as possible was collected in the Channel under the flags of Admirals Sir George Tryon and Baird. All the ships of the Channel and Reserve and Training Squadrons were called together with the battleships, cruisers, and first-class gunboats in the "First-class Steam Reserve," and twenty-four first-class torpedo-

boats. No coast-defence vessels were employed. The mobilization was intended to test the organizing capacity of the new Intelligence Department.

The preparations occupied many weeks at the dockyards, and the vessels were assembled at Spithead and Portland respectively on July 14th, within twelve days of the formal mobilizing order of the Admiralty. In comparison with the confusion that reigned three years before, when we were on the verge of war with Russia, this result was applauded, and in some measure public anxiety was allayed. Authority congratulated itself, and the outlook seemed to brighten.

The mimic warfare of 1888.

But the test was to come. It had been arranged that the two fleets—poor things, it is true, but our all for the defence of the Home seas—should be used to convince the nation that the Navy was being maintained up to a standard of sufficiency, for this was the question of the hour rather than its efficiency, which must have been deplorable. The Admiralty set out an ambitious "General Idea" for the operations, which necessitated each force being split up into two squadrons. The basis of the mimic war was—

"A maritime nation with whom hostilities are imminent prepares two squadrons in two ports some distance apart (Pembroke and Lough Swilly), ready to commence operations the moment war is declared; but before their preparation has been completed war breaks out, and a blockade of both ports is established. The blockaded squadrons endeavour to escape, and carry out certain prearranged operations. The blockading squadrons endeavour

to prevent the escape of the enemies' squadrons, or, should they fail in doing so, to follow and endeavour to capture them."

These operations raised a number of problems for solution, so far as a satisfactory solution of warlike problems under peace conditions is possible. The mimic war revealed the difficulty of maintaining a blockade in these days of steam-propulsion, and the Committee which the Admiralty directed to inquire into the lessons which should be drawn from the operations came to several momentous conclusions. This body consisted of three of the most distinguished officers then in the Navy: Admiral Sir William Dowell, Admiral Sir R. Vesey Hamilton, and Vice-Admiral Sir Frederick Richards. For the information of those who are unacquainted with the life stories of the three officers whose names were appended to the report, it may be remarked that the chairman, Sir William Dowell, had not only fought in China, the Black Sea, and Egypt, but had had command of the Channel Squadron, and knew the ships on which the country was depending for safety. Sir R. Vesey Hamilton and Sir Frederick Richards had also had control of the country's most important fleets as the chessmen, so to speak, with which to study the problems of war. Both the last-named officers afterwards served as Lords of the Admiralty successively during the period of remarkable activity dating from the Naval Defence Act of 1889, and they had some share, therefore, in placing

the Fleet on a better footing than it was at the time that they sat in judgment on its deficiencies.

Momentous questions.

These officers were directed to consider—

"The feasibility, or otherwise, of maintaining an effective blockade in war, of an enemy's squadron, or fast cruisers, in strongly fortified ports, including the advantages and disadvantages of—

"(*a*) Keeping the main body of the blockading fleets off the ports to be blockaded with an inshore squadron.

"(*b*) Keeping the main body of the blockading fleets at a base, with a squadron of fast cruisers and scouts off the blockaded ports, having means of rapid communication with the fleet.

"(*c*) In both cases the approximate relative number of battleships and cruisers that should be employed by the blockading fleet, as compared with those of the blockaded fleet.

"The value of torpedo gunboats and first-class torpedo-boats, both with the blockading and blockaded fleets, and the most efficient manner of utilizing them.

"As to the arrangements made by 'B' Squadron for the attack of commerce in the Channel, and by 'A' Squadron for its protection.

"As to the feasibility and expediency of cruisers making raids on an enemy's coasts and unprotected towns, for the purpose of levying contributions.

"As to the behaviour and sea-going qualities of, or the defects in, the new and most recently commissioned vessels, as obtained from the reports of the admirals in command of the respective squadrons.

"The general conclusions to be drawn from the recent operations."

In these references the authorities raised the whole question of the effective control of the "nearer seas" and the safeguarding of British commerce, and with splendid courage and loyal devotion to the cause of the Empire the Committee acted up to the full powers thus given to them, and reported exhaustively, hiding nothing, extenuating nothing, and causing some confusion among the official apologists who had been energetically preaching confidence and endeavouring to silence the agitation for a strong Fleet.

Principles for naval organization.

The Committee issued a report which revealed the weakness of the Navy in glaring characters. It is not necessary to traverse the whole of their conclusions; it will be sufficient to direct attention to those passages which bear directly upon the question of the defence of Great Britain. For instance, they laid down the only basis on which this country can carry out its traditional Nelsonian policy of blockading the enemy in his ports:—

"(*a*) Under the altered conditions which steam, and the development of attack by locomotive torpedoes, have introduced into naval warfare, it will not be found practicable to maintain an effective blockade of an enemy's squadrons in strongly fortified ports, by keeping the main body of the fleet off the port to be blockaded without *the blockading battleships being in the proportion of at least five to three*, to allow a sufficient margin for casualties—to which the enemy's vessels in a secure harbour would not be exposed—and the necessary periodical absence of a portion of the blockading squadron for the purpose of replenishing fuel, making good defects, etc. A still larger proportion

might be necessary if the area to be covered by the blockaders was extensive.

"(*b*) Provided that a suitable anchorage could be secured in the immediate neighbourhood of the enemy's stronghold, the advantages would be in favour of the iron-clad fleet occupying such a position, and maintaining a sufficient number of swift look-out vessels off the port in direct communication, by signal, or cable from a telegraph look-out ship, with the Admiral. In such case the proportion of ***blockading battleships should not be less than four to three***, and the squadron should be amply provided with colliers, and kept coaled up to full stowage, as it would be necessary to have steam always ready to close with the enemy should he leave his port, and endeavour to bring him to immediate action.

"We do not consider that a distant base would answer in this case.

"It should be the special object, in the construction of Her Majesty's ships, to insure their having superiority of speed over the vessels of similar class of all other maritime Powers.

"To insure having force sufficient to follow enemy's cruisers running a blockade without detriment to their general duties off the port, ***the proportion of fast cruisers employed in blockading should not be less than two to one of the blockaded***, observing that there should always be at least one cruiser for every battleship in the blockading fleet for the maintenance of an efficient inshore squadron."

Commerce-protection.

Turning to the policy of commerce-destruction carried out by Sir George Tryon, the Committee came to the conclusion that the British Admiral lost touch with the enemy when he broke through the blockade,

showing "the necessity of having an ample supply of swift cruisers attached to a fleet," while, as to commerce-protection by the British Force, it was determined that

"the British Admiral, apparently judging that he had an impossible task to perform with the force at his command, considered it his first duty to concentrate his forces for the protection of the English Channel and the approaches to the capital."

These have been the lessons of all recent warlike operations, the lessons of history confirmed, and the lessons also of practically all subsequent manœuvres. "More cruisers, more cruisers," has been the cry of the admirals who have been given tasks to perform with an insufficient number of scouts and newsgatherers.

On another point the "three admirals" gave an important finding, in which all students do not acquiesce. As to the feasibility and expediency of cruisers making raids on an enemy's coasts and unprotected towns for the purpose of levying contributions, they decided—

"There can be no doubt about the feasibility of such operations by a maritime enemy possessed of sufficient power; and as to the expediency, there can be as little doubt but that any Power at war with Great Britain will adopt every possible means of weakening her enemy; and we know of no means more efficacious for making an enemy feel the pinch of war than thus destroying his property and touching his pocket."

Lessons for to-day.

These conclusions were not calculated to produce a sedative influence on a nation already in a nervous state. In summary, it was found that the British force was insufficient to maintain an effective blockade of the enemy's squadrons, and that the British cruisers were insufficient (*a*) to protect commerce, (*b*) to keep in touch with the enemy's raiding vessels, and his battle squadrons. It was evident without minute calculations that the British squadrons were inadequate for the task for the fulfilment of which they exist, a task that must be done thoroughly, or it were best not attempted at all. Half measures in a matter of this type mean disaster. Whoever claims to control the seas must be prepared at the shortest notice to substantiate the claim, otherwise the assumption is a temptation to envious neighbours, and an unnecessary humiliation is courted by the very claim.

The conclusions of the three admirals were based on events limited in extent, about a week altogether, but they have an application that is unlimited. It matters not that the report was published thirteen years or so ago. The truths that it sets forth hold good to-day as they did then. There have been changes in the types of ships and guns, and the torpedo has become a more reliable weapon, but there has been no fundamental alteration minimizing the accuracy of the conclusions. Every development of science has accentuated the lessons.

Finally, the Committee prepared a "General Summary," in which they gave their opinion that,

judged by the standard of sufficiency that their experience and the incidents of the operations had led them to form, "Great Britain is very far from being as strong as she should be on the seas, either in *personnel* or *matériel*." They emphasized the fact that the force assembled for manœuvres represented "the entire naval force available at home for the general purposes of war; *i.e.* for reinforcing our squadrons in the Mediterranean and on distant stations, for maintaining our necessary superiority in the Channel, as well as the considerable light squadrons which would undoubtedly be required on the coast of Ireland, and for the protection of our merchant fleets approaching and leaving our shores." All this has been practically true of the manœuvres each year since these words were penned; on each occasion the squadrons which have been mobilized have been those upon which would fall the discharge of the many duties outlined by the three admirals.

What is required.

Having drawn attention to these facts, which were far less generally recognized thirteen years ago than to-day, the Committee laid down in further detail the standard by which the forces in Home waters and in the Fleet Reserve—ships presumably, but then not really, ready for sea—should be judged, and these portions of their remarks are of general and permanent interest. They concluded by insisting—

"That the Channel Fleet (so-called) should, supposing the enemy to be a great maritime Power, be of sufficient force to blockade the fleets of such Power in their ports, or to bring them to immediate action should they put to

sea; and that there should always be an effective Reserve Squadron, absolutely confined to Home waters, sufficient to hold the Channel and protect the coasts and commerce of the United Kingdom; in addition to the district (coast defence) ships which would be necessary for active local defence on the coasts of Great Britain, Ireland, and the Channel Islands, and that there should then remain available a sufficiency of battleships and swift cruisers to reinforce our squadrons abroad to the necessary point of superiority with reference to the requirements of each station, for the formation of detached squadrons, and convoys for commerce and troops, over and above the number required for Home and Mediterranean service, and an ample reserve to meet the waste of war.

"If England could 'consistently with national honour' control the question of peace or war there would be no need for haste in bringing up her naval force to the standard required for insuring, under Providence, a successful issue to a struggle for the freedom of the seas; but, as there seems nothing to support the belief that she would have any option in the matter, when it suited another great Power to challenge her maritime position, we are decidedly of opinion that *no time should be lost in placing her Navy beyond comparison with that of any two Powers.*

"Without particularizing her possible antagonist, there can be no doubt but that, were England involved in a maritime war, and she were to resume her natural rights as a belligerent—which appear to have been voluntarily laid aside by the Declaration of Paris in 1856—complications with neutral States would inevitably ensue, and her whole commercial position, and the immense carrying trade by which it is sustained, would be jeopardized at the outset were war to be forced upon her at a time when her Navy was weak.

"*No other nation has any such interest in the maintenance of an undoubted superiority at sea as has England, whose seaboard is her frontier.*

"England ranks among the Great Powers of the world by virtue of the naval position she has acquired in the past, and which has never been seriously challenged since the close of the last Great War.

"*The defeat of her Navy means to her the loss of India and her Colonies, and of her place among the nations.*

"Without any desire to question the sums annually granted by Parliament for the maintenance of the services, we cannot but note the disproportion in the appropriation when the magnitude of the issues involved is taken into consideration."

Official assurances.

Such a wholesale condemnation of the position which the authorities had been engaged in bolstering up occasioned surprise and annoyance; but since the report had to be published, Admiral Sir Arthur Hood (afterwards Lord Hood of Avalon), who was then, and had been for several years, the First Sea Lord of the Admiralty, and therefore the chief naval adviser to Lord George Hamilton, the political head of the naval administration, added some notes on the conclusions of the Committee. How much importance should have been attached to these apologies may be judged if the following extracts are read in the recollection of the provisions of the Naval Defence Act of 1889 and subsequent events:

"With regard to furnishing convoys for the protection of commerce, the days of convoys are past, and whilst at once admitting that our naval force is not of sufficient

strength to perform efficiently the various services sketched out by the Committee, in the case of war with one maritime nation, I believe it is of sufficient strength to engage the forces of any single maritime Power with success; to protect our coasts from the possibility of invasion, and to afford fair protection to our commerce abroad and good protection to our commerce in the Channel and its vicinity, and I am certain that by the end of next year the strength of our Navy will be very largely increased as compared with the advance which can be made by any other maritime Power in the same time."

These assurances read strangely now. Within a few months all the confident words were swallowed, and Parliament, at the suggestion of the Government of the day, under which Lord Hood still served, adopted a measure for building in a period of five years men-of-war costing twenty-one and a half millions. Before the five years had come to an end, moreover, it was evident that the provision had not been adequate, and Lord Spencer, who had succeeded Lord George Hamilton at Whitehall, introduced a supplementary programme. It may be suggested that these mistakes of thirteen years ago are of no interest to-day. Seriously, do they not show the amount of reliance that can be placed on official assurances? The action of Lord Hood of Avalon is inexplicable. This is one of those incidents that we do well to remember for our guidance as a nation in the future when criticism is met with solemn denials and confident anticipations.

England's all-in-all.

An attempt has been made to indicate the functions of the British Fleet by going back several years to the last available evidence. It is apparent that the Admiralty then, as now, had no false ideas as to the Fleet being split up so as to give individual protection to the commercial ports and coast towns, and all that has occurred since has rather exaggerated these views than tended to weaken them in favour of a policy which would entail the construction of a large number of ships specially for coast defence. It is twenty years now since this type of man-of-war was abandoned as unsuitable to this country. Every ship in the Fleet to-day has been built for open sea work away from any base, carries coal, ammunition, and all requisites to long absence from a port. It must be recognized that the place of the British squadrons in time of war is off the enemy's ports, and only sufficient force should be left round our shores to give a general protection. Though the three admirals' report gave no satisfaction to the Admiralty, it is a charter of our commerce afloat, of our Imperial existence, our continued enjoyment of our liberties and prosperity, and the best guarantee of the continuance of peace. It would be well if a copy of the admirals' report were handed to each member of the House of Commons on the eve of the introduction of the Navy Estimates, that he might study again the problems of Imperial Defence so clearly set forth by these officers. All broad questions of defence are usually forgotten in some side issue of no importance, and members of naval constituencies will dilate to

an empty House on minor matters of rates of pay for dockyardsmen and their petty grievances, instead of devoting themselves to the large questions that are of real and abiding importance. Parliament is trivial in its attention to the provision for safeguarding the Empire, and only serious when it has some small concrete point of administration to occupy its attention. Everything depends on the pressure of public opinion.

FIRST COST OF THE BRITISH FLEET

[*To face p.* 55.

ADMIRALTY STATEMENT OF THE COST OF THE DIFFERENT CHARGES) ADDED IN EACH YEAR TO THE FLEET, AND

Note.—The percentage rates adopted in these Tables are the 1901–02, but are regarded

Year of completion.	Armoured, protected, and partially protected. — Depreciation, 4 per cent. per annum for 22 years from date of completion.	Cruisers, gun-vessels, gun-boats, troop-ships, etc. — Depreciation, 6 per cent. per annum for 15 years from date of completion.
	£	£
First cost of ships not included for depreciation	11,880,374	7,718,784
First cost of ships completed in 1880–81 ...	684,102	
,, ,, 1881–82 ...	2,092,382	
,, ,, 1882–83 ...	755,247	
,, ,, 1883–84 ...	92,488	
,, ,, 1884–85 ...	725,919	
,, ,, 1885–86 ...	2,884,409	
,, ,, 1886–87 ...	2,747,067	
,, ,, 1887–88 ...	6,208,458	1,210,281
,, ,, 1888–89 ...	1,887,244	630,506
,, ,, 1889–90 ...	1,568,942	889,479
,, ,, 1890–91 ...	2,661,827	166,861
,, ,, 1891–92 ...	2,741,716	66,870
,, ,, 1892–93 ...	5,256,821	178,421
,, ,, 1893–94 ...	9,798,199	669,427
,, ,, 1894–95 ...	1,192,771	887,600
,, ,, 1895–96 ...	1,826,171	809,846
,, ,, 1896–97 ...	2,750,874	755,296
,, ,, 1897–98 ...	6,607,328	692,446
,, ,, 1898–99 ...	4,468,876	862,709
,, ,, 1899–1900 ...	6,270,066	976,151
,, ,, 1900–01 ...	1,898,961	815,056
,, ,, 1901–02 ...	7,784,491	1,362,052
Total	72,892,804	10,471,951
Add,—Cost of vessels lost, sold, or broken up, built within above period	1,404,892	111,899
Total	78,797,696	10,583,850
Estimated annual percentage for depreciation	4 per cent.	6 per cent.
Annual amount required for replacement ...	2,951,908	635,001
Total cost of all ships	83,723,178	18,190,735

BRITISH FLEET.

CLASSES OF VESSELS (INCLUDING PROPORTION OF INCIDENTAL THE ESTIMATED ANNUAL RATE OF DEPRECIATION.

same as in the Estimates for the Fourteen Years 1888–89 to as only approximate rates.

Torpedo-boats, steam launches, etc. Depreciation, 9 per cent. per annum for 11 years from date of completion.	Guard, receiving, training, and harbour vessels. Depreciation, 4 per cent. per annum for 22 years from date of completion.	Small vessels, tugs, and yard craft. Depreciation, 5 per cent. per annum for 18 years from date of completion.	Total.
£ 1,560,897	£ 6,169,556	£ 428,380	£ 27,202,441
	—		684,102
	—		2,092,382
	—		755,247
	67,695		160,188
	48,201	—	774,120
	—	7,280	2,891,689
	—	12,869	2,759,986
	—	9,204	7,427,893
	—	21,129	2,538,879
	24,005	—	2,482,426
	—	14,136	2,842,324
6,646	—	24,896	2,839,628
15,741	—	—	5,450,988
21,025	—	—	10,488,651
24,372	—	—	1,604,748
188,775	—	27,964	2,847,256
86,151	—	33,901	3,575,722
39,019	—	98,086	7,431,824
14,154	—	61,575	5,406,814
20,871	—	80,522	7,297,610
32,454	—	216,588	2,458,059
109,182	—	265,284	9,520,909
508,340	139,901	818,334	84,326,330
1,264	—	—	1,517,555
504,604 9 per cent.	139,901 4 per cent.	818,334 5 per cent.	85,843,885 —
45,414	5,596	40,917	3,678,336
2,068,737	6,309,457	1,241,664	111,528,771

To this total should be added the following:

The ships actually under construction April 1, 1902, will cost about 32,500,000

£144,028,771

The new programme, 1902–3, represents an additional 5 millions sterling.

CHAPTER III

AN IMPERIAL NAVY

THE COLONIES AND THE FLEET

Imperialism.

SINCE Lord Beaconsfield succeeded in his design to proclaim Queen Victoria Empress of India, a section of the nation has regarded the use of the word "imperial" with some suspicion. There has been a certain feeling that its use in a country distinguished by the most liberal institution savours of a contradiction of terms, and is liable to lead to acts of aggression unworthy of a people who have made liberty more really their ideal than any other community, for in no country is personal freedom more unfettered than in those regions of the world over which the Union Jack flies. The word, however, is quite innocent of offence. It is not the watchword of any party; it does not suggest conquest; it does not signify the subjection of dependent peoples to the will of a predominant partner. The term need not bring a blush of guilt to the cheek of the most progressive Liberal of the Manchester School. Imperialism is a convenient term for indicating that voluntary union that binds together the greatest Empire that the world has ever seen. It has nothing to do

with an absolutism, a modern autocracy, or with that rampant Chauvinism that has reared itself on the Continent from time to time. "Imperialism" is a word of honest repute, and those who would wilfully attach to it the same significance as belongs to the term "Jingoism," do poor service to the State. In the coming days, when the closer union of the Colonies and the Mother Country will be one of the problems claiming solution, we shall need some word that can be used without offence at home, and without causing alarm or suggesting schemes of aggression to our European neighbours, and that word is "imperialism." The working out of our Imperial salvation is one of the tasks of the next few years, and it were well that we should prepare ourselves for the task, which will require all the tact and business ability which our statesmen possess. Like a great edifice, a scheme of Imperial government cannot be erected in a single year. It must be the growth of long periods of time, moulded by ever-changing circumstance, founded deep on the united will of all whom it concerns. We have seen the Colonies drawn into closer accord with the Mother Country in face of the military difficulties in South Africa, and we have witnessed the birth of the great Commonwealth under the Southern Cross. Evolution, not revolution, is the dominant feature of all Anglo-Saxon development, and it is thus that we must arrive at a scheme of Imperial federation. Gradually stone by stone will be placed in position, not by overbearing driving of the unwilling, but by the free labour of all the members of the Imperial family. Much

in this direction has been done, much more remains to be done, and it may be that in this Coronation year we shall see the corner-stone of the fabric moulded and well and truly laid.

Defence for the Empire.

One step towards the recognition of the Empire has been taken since the King ascended the throne. Those who remember the heated and angry division of opinion when the Earl of Beaconsfield suggested that Queen Victoria should be proclaimed Empress of India, were amazed at the absence of criticism when the Royal title was further extended in order to include a phrase which should indicate the Empire that lies in other seas, those daughter lands that have so splendidly won their right to be included, not as dependents, but as self-governing loyal sister states. Only a year ago was King Edward proclaimed with all due circumstance and amid a chorus of approval, "Edward VII., by the Grace of God, of the United Kingdom of Great Britain and Ireland, of the British Dominions beyond the Seas, King, Defender of the Faith, Emperor of India." In this proclamation, for the first time, the sovereignty of the Monarch over those far distant lands was definitely recognized. Now we are about to go another step forward. As we have awakened to the consciousness that we are members of a great Empire, we are gradually becoming conscious of the fact that that Empire requires defending, not by any haphazard hope of muddling through, but by some well-defined scheme which will be adequate to its needs, and will promise efficiency. It is typical of the attitude of the

Government towards all questions of defence that it should be sought to obtain an efficient Imperial Army before any effort is made to obtain what is of far more importance—an Imperial Navy. Mr. Brodrick announced in the House of Commons on March 4th that a military scheme was under consideration, and it was not until Mr. Arnold-Forster was definitely interrogated on the subject that he stated that the Admiralty hoped also to raise the question of a really Imperial Navy at the forthcoming Colonial Conference in London. It may be that the question prompted, on the spur of the moment, the decision to take the advice of the Colonies. On the other hand, the War Office have a scheme drawn up which will serve as a basis of discussion when the delegates foregather. Passing over this apparent failure of the naval authorities to seize of their own initiative this opportunity to submit tentative proposals to the consideration of the colonists, we may heartily welcome the assurance that the question of naval and military defence will be discussed. In the words of Mr. Brodrick—

"I trust it may be possible that some arrangement may be made for the whole forces of the Empire to be available in case of a war in which the interests of the whole Empire are involved. An opportunity of conferring with our Colonial friends on this subject will occur on the visit of the Colonial statesmen for the Coronation, and we shall then have an opportunity of seeing how far the schemes in our minds commend themselves to the Colonies, how far they are willing to undertake the responsibility which will more closely link together the various parts of the Empire."

These words and the similar announcement which was made on behalf of the Navy indicate that at last we are about to approach this delicate matter in a businesslike manner. The consummation of the proposals would be the most eloquent tribute to the solidarity of the Empire that could be provided. It would impress the world more than anything else with the oneness of sentiment of all the Colonies, and would be one more step towards the preservation of peace. Whether it will be possible to arrive at a solution satisfactory to Colonies and Mother Country without some readjustment of their commercial arrangements with Great Britain and each other is open to some doubt. Colonial contributions.

The Navy is the most Imperial force in existence, though it is never called Imperial, as are the maritime forces of Germany, Russia, and Japan. We have been timid of the word, but it must come, and it were well we accustomed ourselves to its use. The Fleet is an instrument not merely for the defence of these islands, but for the protection of the Colonies and Dependencies, large and small. For years it has safeguarded all these Anglo-Saxon lands, but we have never received from the Colonies a due recognition of their indebtedness to the Mother Country for the security in which they have been able to build up their prosperity and develop their resources. In a measure it may be replied that the Fleet has existed for the defence of the over-sea commerce of the Mother Country. In the past that was true—true in the fullest sense. Now, however, we should recognize the fact that the British Fleet

exists for the defence of the Colonies as well as of Great Britain, and as they dispense with the leading-strings of early days, the principle of colonial contributions to the insurance funds of the Empire should be placed on an adequate basis. In a measure the principle has been already admitted by the Australian Colonies, by the Cape, and (without any consent on the part of those most concerned) by the teeming millions of India. What do the Colonies contribute towards the Navy? The present position is set out in a Return issued by the Board of Trade—

INDIA.

	£
Contribution towards His Majesty's ships on the East Indies Station	100,000
Subsidy to the Admiralty for manning and maintaining His Majesty's ships and vessels for the Naval Defence of India (for India has a Marine of its own, small, but fairly efficient)	61,600

AUSTRALASIA.

Contribution towards the maintenance of His Majesty's vessels for the protection of the floating trade in Australian waters ...	126,000

This contribution was thus apportioned among the various States of the Commonwealth and New Zealand on a population basis in the year commencing April 1st, 1901:—

	£
New South Wales	37,549
Victoria	33,289
South Australia	10,067
Western Australia	5,068
Tasmania	4,788
Queensland	13,787
New Zealand	21,452
Total	126,000

NATAL.

A gift of 12,000 tons of coal is made annually.

CAPE.

	£
A sum is paid annually towards the expenditure by the Imperial Government in connection with His Majesty's Naval Service	30,000
Total Indian and Colonial contributions ...	317,600

Resources of the Colonies.

It will be noticed that neither Canada nor Newfoundland give any aid. It can be admitted that the latter colony is not in a financial position to do much financially to assist in the defence of the Empire, but it can and is willing to supply men for the Naval Reserve. A beginning has already been made, a large number of men have been enrolled, and an Act of the present session will enable the Admiralty to place the new force on a permanent basis. It is confidently hoped that other colonies will come forward with offers of men for the Reserve, and thus in a measure relieve the Mother Country from the heavy burden of finding not only the "regulars" but the reserves which will be required to fill the gaps which will inevitably be caused by war. The present financial assistance furnished by the distant parts of the Empire is not large. Is there reasonable excuse for regarding it as possible that they may do more in the future to aid the Home Country to support the ever-increasing burden of defending the Empire? Probably the best basis on which to judge is the total income and the imports and exports and sea-commerce of the several colonies.

Countries.	Aggregate revenue.	Aggregate tonnage of mercantile marine.	Annual clearances of shipping in the foreign trade.	Annual clearances of shipping in the coasting trade.	Annual value of imports by sea, including bullion and specie.	Annual value of exports by sea, including bullion and specie.
	£	Tons.	Tons.	Tons.	£	£
United Kingdom	130,384,684	9,304,108	49,300,887	54,425,666	562,588,336	386,345,793
India	68,637,164	61,606	4,157,138	12,648,715	64,185,444	78,026,473
Self-governing Colonies. (*g*)						
Australian Commonwealth—						
New South Wales	10,201,440	131,713	3,920,801	No Returns	24,080,986	22,315,377
Victoria	7,427,820	101,135	2,944,192	470,146	15,538,649	15,246,169
South Australia (except Northern Territory)	2,829,462	46,085	1,772,253	No Returns	5,464,706	6,908,064
Northern Territory ...	72,471	742	71,715	No Returns	130,382	121,434
Western Australia	3,010,005	12,517	1,606,332	No Returns	5,962,178	6,852,054
Tasmania	1,054,980	15,783	613,955	No Returns	2,073,657	2,610,617
Queensland	4,588,207	21,083	819,662	3,791,220(*a*)	6,713,615	8,765,063
New Zealand	5,651,781	98,753	825,275	6,870,655	10,646,096	13,246,161
African—						
Natal...	1,886,710	2,357	1,405,180(*b*)	No Returns	6,694,501(*b*)	1,125,367(*c*)
Cape of Good Hope... ...	6,236,210	2,637	4,701,536(*f*)	4,558,851	19,677,872(*b*)	8,147,600(*g*)(*c*)
American—						
Dominion of Canada ...	10,549,885	639,284	6,912,400(*d*)	16,386,036(*d*)	38,963,530(*e*)	39,430,423(*e*)
Newfoundland	433,898	112,221	707,286	No Returns	1,540,510	1,772,790
Totals for the Colonies ...	53,942,869	1,184,380	26,300,587		137,486,682	126,541,125

REMARKS.

(*a*) Inclusive of the tonnage of vessels (2,574,014 tons) engaged in coasting voyages terminating beyond the Colony.
(*b*) Exclusive of the tonnage of transports.
(*c*) Including the value of gold, the produce of South African States, brought into the Colony overland, and exported by sea.
(*d*) Exclusive of the tonnage of vessels (6,300,050 tons) trading on the rivers and lakes between Canada and the United States.
(*e*) Total imports and total exports. Imports and exports by sea are not separately shown in the Canadian returns.
(*f*) Inclusive of the tonnage of transports carrying stores, but exclusive of the tonnage of those conveying troops.
(*g*) The exports of raw gold decreased from £13,815,683 in 1899 to £336,795 in 1900.

Foreign Naval Powers.

Countries.	Aggregate sums voted for sea-going force.	Aggregate revenue.	Aggregate tonnage of mercantile marine.	Annual clearances of shipping in the foreign trade.	Annual clearances of shipping in the coasting trade.	Annual value of imports by sea, including bullion and specie.	Annual value of exports by sea, including bullion and specie.
	£	£	Tons.	Tons.	Tons.	£	£
Russian Empire ...	8,662,801*	190,078,000	633,821	8,340,432(a)	20,628,161(a)	36,003,000(b)(c)	40,402,000(b)(c)
Germany	7,472,656†	89,008,000	1,941,645	14,108,162	3,918,209	320,306,000(d)	255,072,000(d)
						Metric tons.	*Metric tons.*
Netherlands ...	1,360,659	12,922,000	346,997	9,119,891	—	13,271,000	2,564,000
						£	£
France	12,055,492	145,494,000	1,037,726	19,333,545	7,199,827	179,404,000	153,901,000
Portugal	507,430	11,742,000	129,180	9,978,553	1,256,048	8,347,000(b)	6,056,000(b)
Spain	1,000,119	35,440,000	774,579	14,096,948	10,398,025	31,722,000	27,967,000
Italy	4,903,109	69,654,000	873,054	20,080,840	10,067,615	49,239,000	30,112,000
Austria-Hungary ...	1,644,437	Austria. 66,795,000 Hungary. 49,877,000	Austria. 198,322 Hungary. 66,344	Austria. 12,640,984 Hungary. 2,128,595		13,999,000(b)	12,705,000(b)
United States (Year ended June 30)	13,385,574	139,499,000	826,694	23,617,658(e)	—	177,492,000	288,030,000
Japan	4,077,553	25,809,000(b)	796,930	4,008,567	4,594,860	25,876,000	23,624,000

REMARKS.

* In addition to the ordinary estimates, a sum of £11,500,000 allotted in 1897 and 1898 is being spent on naval expansion.
† The cost of the maintenance of the forts at naval ports is included.
(a) The figures refer to Russia-in-Europe and the Caucasian ports of the Black Sea.
(b) Special trade, *i.e.* imports for Home consumption or exports of domestic produce or manufacture, as the case may be.
(c) Trade by European sea-board, including also Finland.
(d) Total trade. Imports and exports by sea are not separately distinguished.
(e) Exclusive of the tonnage of vessels engaged in the Lake trade (4,663,483 tons) between the United States and Canada.
(f) Includes the Chinese indemnity.

The totals under the various heads for the self-governing Colonies, with their combined naval contributions of £156,000, may be contrasted with the cost of the navies of foreign countries and their aggregate revenues and trading returns (see pp. 62, 63).

From these particulars it is evident that the self-governing Colonies support a small burden for naval defence in comparison with most foreign countries, and, moreover, they do not need to spend large sums on military forces, as do the peoples of the Continent, in addition to the compulsory personal service.

Taxation and representation.

Though the principle of colonial contributions towards the defence of the British Empire has been admitted by the sums which the Australian Colonies and the Cape set aside annually and by the gift of Natal of coal, any further progress towards a wider recognition of the principle will have to be made with great caution, since taxation without representation is anathema to an Anglo-Saxon who has been bred under the most liberal system of Government. It would be madness to attempt to force the hands of the colonists. All that can be done is to set out as effectively as possible the present position of affairs, and leave it to their feeling of loyalty to the Empire—of which they form a part, and from association with which they gain such undoubted benefits—to prompt their consent to some workable scheme. It is possible that no permanent solution will be arrived at until the Mother Country and the Colonies evolve an arrangement by which the present so-called Imperial Parliament will

IMPERIAL INSURANCE

[*To face p.* 65.

IMPERIAL INSURANCE.

THE BRITISH NAVY.

WHAT IT COSTS—	£	£
Total expenditure (gross—*i.e.* including Indian and Colonial contributions and other sums that reduce the amount paid by the "home" tax-payer)		32,376,717
Cost of additions to the Fleet, 1902	5,500,000	
New guns ditto ...	3,000,000	
		8,500,000*
Total cost (1902) ...		23,876,717

WHAT IT PROTECTS—

11,894,000 square miles of territory, or nearly a quarter of the earth.

42,989 miles of coast; France, Russia, Germany, Italy, and the United States combined have 57,032 miles.

396,000,000 people; more than a quarter of the population of the world.

10,550,094 tons of merchant shipping, or more than France, Russia, Germany, Italy, the United States, Austria-Hungary, the Netherlands, Portugal, Spain, and Japan combined.

A large proportion of all the oversea trade of the world.

Protection afforded to a quarter of the world's population and area, and a half of its shipping.

* In the case of a trading or manufacturing company, this sum, being expenditure for increasing the "plant" (in other words augmenting the Fleet) would come out of capital, and is therefore deducted from the total to ascertain the cost of naval protection in 1902.

become really Imperial, representative of all parts of the Empire, and it will be possible to distribute on some equitable basis the heavy and ever-increasing burden which is now borne by the Home taxpayers. Without the Navy it is certain that life in all the Colonies would be insecure. What would happen to the Australian Commonwealth were it not for the naval squadron in China masking the forces of Russia? What would be the fate of the Cape were it not for the local squadron and the ships in the Mediterranean, which (as was illustrated on the occasion of the outbreak of the Boer War) are ever available to strengthen the defences on the African coast? Would Canada rest happy and secure were it not for the British squadron which is ever patrolling its shores, and for the assurance that on the first whisper of trouble that force could be doubled or even trebled in a week?

Colonists may be reminded that the cost of the British Fleet has increased immensely during the years in which they have been developing their resources without let or hindrance in the way of Imperial taxation. Since 1889 the effective Fleet has been rebuilt at a cost of over £100,000,000, all of which has come from the pockets of the Home taxpayer. In this period the annual cost of the Navy has doubled, the *personnel* has doubled, and by expenditure under successive Naval Defence Acts the dockyard accommodation for ships in all parts of the world has been more than doubled. Everywhere expansion has been necessary, and this tendency has been most marked at the Cape, on the

North American coast, and in a measure in Australian waters. Will the Colonies recognize the debt that they owe to the Mother Country for the protection she has afforded them during their years of infancy by coming forward now to bear some of the grievous burden which must be borne in the interests of all, though it falls at present unequally on the various parts of the Empire? Surely it ought to be possible to arrive at some scheme whereby we shall obtain a really Imperial Naval Force, a Fleet that shall be invincible, the greatest instrument for peace in the world. In face of the growing rivalry of foreign Powers an arrangement of this character gives the best promise for the maintenance of the Fleet at a requisite standard of safety. Efficiency requires that we should evolve a workable system of defence, and the task of finding a solution to the problems which the need presents should not be beyond the achievement of the Empire's statesmen. The Empire depends for its continuance on the continued command of the intervening seas by the British Fleet, and the fact should be recognized in a more practical manner. Unless the ocean tracks followed by the trade of the Mother Country and the Colonies is dominated by men-of-war flying the White Ensign, the Imperial fabric cannot hold together. In the words of the Chancellor of the Exchequer, "we intend to approach the Colonies on the subject not by any means as beggars, but in the belief that they desire, so far as they are able, to share with us the burden of Empire."

CHAPTER IV

DISTRIBUTION OF THE BRITISH SQUADRONS

THE GERMAN MENACE

FAR-FLUNG are the battle squadrons of the British Navy. In this respect the duty of the British force differs from that of other countries. France concentrates almost all her power to strike in the Channel and the Mediterranean, Russia (excepting her isolated Black Sea Squadron) makes the Baltic and the Far East her two chief centres, and the same points are guarded by Germany. We touch these navies at these several points. We are in contact with the ships of the United States in the Atlantic, and with those of America and Japan in the Pacific. For some years past we have been unable to maintain our old supremacy in the extreme East and on the American shores. It is impossible that we should be equal to each Power of the world, each competitor for sea-power, in each of the Seven Seas. But until the present year we have maintained the old organization of our forces that dates back, more or less, to the days of sailing-ships. We have continued to keep eleven squadrons ever busy on patrol duty. In view of the advance of other nations and the mobility that steam confers, the wisdom of this

An all-world Power.

wide distribution of British force, its division and reiterated sub-division, has been open to serious question, and Lord Brassey, in particular, has criticized Admiralty policy in this respect. Of course, no one can have anything to advance against the highest possible strength of the Home Squadrons, the Channel, Reserve and Cruiser Squadrons, or of the one in the Mediterranean, but the wisdom of retaining some of the other fleets in their present strength is debateable. There can be no doubt that the squadrons can be too much far-flung, and that the distribution over large areas of the world's waters of British men-of-war casts an unnecessary strain on British taxpayers, and would be a source of embarrassment in time of war. At present the distribution of the Fleet is as wide as ever it was in the history of the Navy.

In the "Near Seas" we have the following vessels, which are arranged under the heads of their several squadrons:—

MEDITERRANEAN SQUADRON.

The battle squadrons.

Battleships.—Cæsar, Canopus, Bulwark, Formidable, Hood, Illustrious, Implacable, Irresistible, Ramillies, Renown, Royal Sovereign, Victorious.*

First-class Cruisers.—Andromeda, Theseus.

Second-class Cruisers.—Diana, Gladiator, Naiad, Vindictive.

Third-class Cruisers.—Barham, Pegasus, Pandora, Pyramus, Pioneer, Scout.

Sloop.—Cruiser.

* The battleship Vengeance is to join this squadron, and the Aboukir, armoured cruiser, is to replace the Theseus, a protected cruiser.

Gunboats.—Speedy, Dryad, Harrier, Hussar.

Destroyers.—Twenty-four.

Other Ships.—Rupert (old coast-defence ship), Tyne (supply ship), Vulcan (repair ship), Maine (hospital ship), Surprise and Imogene (dispatch vessels).

CHANNEL SQUADRON.

First-class Battleships.—Hannibal, Jupiter, Magnificent, Majestic, Mars, Prince George, Repulse.

First-class Cruiser.—Niobe.

Second-class Cruisers.—Furious, Arrogant.

Third-class Cruisers.—Pactolus, Prometheus.

Destroyers (at the Home ports in commission).—Twenty-four.

RESERVE SQUADRON.

Battleships.—Anson, Benbow, Camperdown, Collingwood, Empress of India, Nile, Revenge, Sans Pareil, Trafalgar, Resolution.

First-class (armoured) Cruisers.—Australia, Galatea.

Second-class Cruisers.—Malampus, Severn.

Third-class Cruiser.—Bellona.

Gunboats.—Alarm, Antelope, Circe, Gleaner, Leda, Renard, Onyx, Skipjack, Spanker, Speedwell.

Destroyers.—Four.

Account must be taken of the armoured cruisers Immortalité and Narcissus, in commission at Sheerness and Portsmouth as gunnery ships.

Under the orders of the Admiral Superintendent of Naval Reserves are also the two second-class cruisers Apollo and Andromache, which act as drill-ships for Naval Reserve men at Southampton and at North Shields respectively, and two special-service vessels, Hearty and Jackal.

CRUISER SQUADRON.

First-class Cruiser.—St. George.

Second-class Cruisers.—Brilliant, Hyacinth, Juno, Minerva, Rainbow.

Besides this large Home force, we have a great squadron in the Far East. The events of the past few years have tended to increase the importance of this distant group. One after another, as Russia and Germany have added to their strength, additional ships have been despatched from this country. This movement of war-ships to the Far East has been one of the most remarkable events of the past few years, and is referred to in another chapter.

Forces in distant seas.

Besides these four main squadrons, there are six others, which may be regarded as the Colonial forces, since they patrol the coasts of far-off dependencies, protecting British rights ashore and defending British commerce afloat. In summary, these collections of men-of-war may be thus indicated:

	Cruisers.			Sloops.	Destroyers.	Gunboats.	Other ships (not war-ships).
	1st.	2nd.	3rd.				
North America and West Indies	1	3	2	2	2	—	4
Pacific	1	2	—	2	1	—	1
South coast of America	—	1	—	2	—	—	—
Cape of Good Hope and West African coast	1	2	3	3	—	5	3
Australia	1	—	7	1	—	3	—
East Indies	—	2	3	—	—	3	2
Totals ...	4	10	15	10	3	11	10

British rivals.

An interesting point for consideration is, how far is British naval power in all these waters masked by that of other squadrons? Light on this matter may be thrown by the following tabulated statements which indicate the forces of the Great Powers in the various spheres:—

MEDITERRANEAN AND BLACK SEA (INCLUDING THE BRITISH CHANNEL FLEET).

	Great Britain.		France.		Russia.		Germany.	
	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.
Battleships—								
First-class ...	19	275,300	6	69,729	2	24,960	Special service ship *Loveley*	537
Second-class ...	—	—	—	—	6	58,000		
Coast-defence	1	5,440	1	4,849	1	3,590		
Cruisers—								
First-class ...	3	29,350	—	—	—	—		
Second-class ...	6	32,000	5	22,953	—	—		
Third-class ...	8	16,350	3	6,999	1	1,492		
Torpedo gunboats	4	4,020	7	6,000	—	—		

Destroyers.—Great Britain, 24; France, about 20.

Submarine.—France, 2.

Auxiliary vessels.—Great Britain: Vulcan (torpedo depôt), Maine (hospital), Tyne (store-ship). France: Foudre (torpedo depôt).

This statement may be regarded as somewhat misleading unless it has some explanation. The British Channel Squadron has been included in the Mediterranean force at the disposal of this country, because its place as soon as there is a rumour of possible war is at Gibraltar, at the very entrance to the Latin Lake. The French have no such arrangement, as their Northern Squadron is required in the Channel, where in case of hostilities we should place reliance on the Reserve and Cruiser Squadrons, and ships hastily mobilized from the Fleet Reserve. At any rate, the object of the Channel Squadron in going to Gibraltar before the outbreak of hostilities would be to prevent the two French Fleets meeting, even if they desired to do so. The British policy would be to attempt to bottle up the enemy in his own ports immediately war was declared. It

is a favourite method of alarmists to include the Northern Squadron of France in the Mediterranean force or in that of the Channel as best suits their argument for the time, but there is no excuse for the former allocation, as in the absence in the Mediterranean of the Northern Squadron the Channel would be undefended, while Great Britain would have her Reserve and Cruiser Squadrons available for any work, offensive or defensive.

Home Seas.

Great Britain.—Reserve and Cruiser Squadrons, Port Guardships, Instructional Flotilla.

France.—Northern Squadron.

Russia.—Baltic Squadron.

Germany.—Kiel Squadron.

	Great Britain.		France.		Russia.		Germany.	
	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.
Battleships ...	10	108,100	7	81,865	1	9,900	10	96,819
Armoured ships, Coast-defence	—	—	4	26,423	3	27,000	2	6,990
Cruisers—								
Armoured ...	4	22,400	2	11,160	—	—	—	—
First and Second class	10	46,450	3	15,000	—	—	3	11,390
Third-class ...	1	3,600	2	4,000	3	9,000	3	5,620
Torpedo gun-vessels ...	10	—	1	—	—	—	—	—
Torpedo vessels and Destroyers	24	—	12	—	—	—	33	—
Submarine ...	5	—	8	—	—	—	Submarine mining vessel, *Pelican*.	

East Indies.

	Great Britain.		France.		Russia.	Germany.
	Ships.	Tons.	Ships.	Tons.	—	—
Cruisers—						
Second-class...	2	9,960	1	4,065	None.	None.
Third-class ...	3	6,040	1	2,452		
Gunboats ...	3	1,275	1	505		

FAR EAST.

	Great Britain.		France.		Russia.		Germany.*	
	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.
Battleships ...	4	51,800	*Redoutable*	8,767	5	51,206	—	—
Cruisers—								
Armoured ...	2	17,600	—	—	6	55,823	1	10,650
First-class protected ...	5	52,550	2	16,391	—	—	—	—
Second-class	5	24,760	3	12,000	—	—	2	18,400
Third-class ...	1	1,580	—	—	2	2,500	—	—
Armoured coast-defence gunboats... ...	—	—	2	3,500	2	3,000	—	—
Sloops	6	—	2	—	6	—	—	—
Gunboats ...	13	—	6	—	2	—	4	—
Destroyers ...	6	—	—	—	—	—	3	—
Despatch-vessel	*Alacrity*		Troopships:		Icebreaker:			
Store-ship ...	*Humber*		*Mytho*		*Silatch.*			
Surveying-ship	*Waterwitch*		*Nile*		Torpedo gun-vessel:			
Receiving-ship	*Tamar*		*Vinh-long*		*Giudamak.*			

* Germany has withdrawn a considerable part of her squadron from Chinese waters.

ATLANTIC (INCLUDING THE CAPE AND NORTH AND SOUTH-EAST AMERICAN COASTS).

	Great Britain.		France.		Germany.	
	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.
Armoured ship ...	*Monarch*	8,845	—	—	—	—
Cruisers—						
First-class	2	15,400	2	13,089	—	—
Second-class ...	6	26,800	2	7,587	1	6,100
Third-class	5	10,445	1	2,410	2	1,700
Sloops	6	—	—	—	—	—
Gunboats	7	—	—	—	—	—

PACIFIC (INCLUDING AUSTRALIA).

	Great Britain.		France.		Germany.	
	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.
Cruisers—						
Armoured ...	—	—	—	—	—	—
First-class ...	2	15,050	—	—	—	—
Second-class ...	2	8,600	*Amiral Protet*	4,065	—	—
Third-class ...	7	12,920	*D'Estrées*	2,500	2	3,280
Sloops	3	3,000	—	—	—	—
Torpedo gunboats	1	735	—	—	—	—
Gunboats	2	1,520	—	—	—	—

In drawing deductions from these statistics, which have been compiled from the latest information, it must be borne in mind that they refer only to the vessels of the Powers actually in commission. France and Great Britain have large reserves of ships at the Channel ports, as Germany has at Kiel, and Russia on the Baltic, while France has an advantage over this country in the Mediterranean owing to the accessibility of Toulon, and the admirably placed torpedo-stations along the Mediterranean shores, which would probably prove a grave inconvenience to the British Fleet in case of hostilities.

The German menace.

No reference has been made in these tabulated statements to the United States. Though we have little "tiffs" with our neighbours across the Atlantic, it is impossible to regard hostilities between ourselves and the Americans as remotely likely. In such a contest we should have many advantages which it is not necessary to enumerate. On the other hand, Germany is a serious menace in the "Home Seas." Her Kiel Squadron is a large modern homogeneous force, and is ever at sea, sternly training for the duties of war. The growth of the Kaiser's Fleet has already suggested the danger of our resting satisfied with the present Two-Power standard, *i.e.* equality with France and Russia.

If, as a nation, we accept this measure of strength, in less than a decade Germany will hold the balance of naval power in European waters. The Kaiser and his people appreciate the old truth that sea-power is synonymous with commercial power. By 1908 they will have squadrons in the North Sea of seventeen battleships, a similar number of cruisers, and forty torpedo-craft, with another great squadron of equal strength in reserve. Germany will dominate those waters in which the British are practically unrepresented, and where hitherto we have had no reason to station a naval force. What is to be the action of the future? To-day the relations between the two countries are officially amicable, but beneath the surface lies the enmity of a large—if not the largest—section of the German people. Moreover, we are destined to be even more deadly rivals in commerce and colonization in the future than now. It was surmised soon after the decision of the Emperor and his subjects to strengthen their navy that the British Government would prepare a counter-move. We possess no naval force in the North Sea. Earle's ship-building yard is conveniently placed as a home for a North Sea Squadron, which should be the creation of the next few years. It is situated on the Humber, which is already fortified, and it is well equipped. Owing to various causes this establishment, which has been largely planned for the execution of Government work, was in the market last year. After consideration the Admiralty refused the option of purchase, and the problem remains. What

will the solution be? The question resolves itself largely into a series of strategical considerations. These must be left to properly constituted authority, but it remains for the nation to see that the matter is not shelved, and that some answer is given.

Wise reforms.

The Admiralty have recognized that the present distribution of the Fleet requires some alteration, and Lord Selborne, in his annual statement for the present year, stated:—

"The distribution of the commissioned Fleet among the various stations of the globe is a product of time. The present distribution has been gradually evolved in accordance with the peace as well as the war requirements of the Empire. I use the term 'peace' in contradistinction to a state of naval war only, and I may say that these peace requirements have, as the Empire has expanded, become more and more exacting. The origin of the present principle of distribution was in a period when wind, not steam, was the motive-power, and when the electric telegraph was unknown. With the changes brought about by steam and the electric telegraph the actual distribution has gradually changed, and adaptability to the needs of the time, and not finality, is the spirit in which the question must be viewed.

"At the present moment the position is as follows: It has been possible to withdraw from the China Squadron some of the additions which were sent there under the stress of the emergency of the year 1900, and the last of the cruisers lent to the Cape has returned to the Mediterranean; but, speaking generally, it was only with difficulty that during the past year the North American, Cape, China, and East India Squadrons were able to carry

out their arduous duties with the strength allotted to them. The question of the future composition of the Australasian Squadron will be discussed with delegates from the Australian Commonwealth and New Zealand during the course of this year. The Pacific and South American Squadrons are being reduced to three cruisers and one sloop, and one cruiser and sloop respectively. At home the Cruiser Squadron is now at its complete strength in numbers, but during the year its strength in quality will be augmented by the substitution of armoured for two of the present protected cruisers.

"To this and the experience which will be gained from its work, both by the officers and men, the Board attach great importance; it is fully recognized that the work which our cruisers will have to perform in war requires constant practice and study. The manœuvres in the Channel last year significantly marked this fact, and the idea of the subsequent exercises in the Mediterranean lends itself to a continuance of the lessons then taught."

This is a most gratifying assurance. We can well afford to economize in the Pacific and on the South American coast in view of the claims upon us elsewhere, owing to the rise of Powers in Europe, which directly challenge our maritime position, and are a formidable menace to our commerce. In European waters we must maintain our superiority beyond all suspicion if we would continue to enjoy the blessings of peace. In the near future the naval authorities will have to face the possibility of Germany ceasing to be officially friendly. At any time the Kaiser and his advisers may use the Anglophobe spirit, which

is so ripe, as a lever for the further strengthening of the Imperial naval forces. Such action, indeed, seems not only possible, but exceedingly likely, when the right time arrives for an additional programme. Nothing would excite the enthusiasm of the German people more than a prospect of meeting us upon the seas and worsting us. In such a cause they would willingly make any sacrifice, and the present generation may even live to see the effort made to wrest from this country the proud claim of supremacy that has been her boast for so many years.

Two new British squadrons.

On the other hand, it should not pass without notice that, since the German Navy Bill was adopted, the British Admiralty have added two squadrons to the effective forces in Home waters. The Reserve Squadron has come into existence as a trained and properly exercised collection of fighting-ships, whereas two years or so ago the ships remained dotted round the coast-line doing coast and port-guard duties. They went to sea only once a year, were inadequately manned, and in every respect unfitted for active service. To-day they are fully manned, and every quarter they put to sea for a fortnight's cruise. Though the ships are old, new ones will take their places, as vessels can be completed to relieve the less modern ships in the Channel and the Mediterranean. The second squadron has come into existence in a peculiar manner. Four old corvettes that for years had been used as sea-going training-ships for naval boys became past repair, and at the same time the Admiralty decided that the day

had gone for such instruction in masts and yards. Consequently they decided that they would train the seamen of a steam navy in steam vessels. The change aroused the fiercest controversy, but the authorities remained firm in their determination, and in place of the sailing-ships commissioned a similar number of modern cruisers. Such a squadron was greatly needed to facilitate the study of cruiser tactics, and shortly after its establishment it was increased by the addition of two more ships, bringing up the number to six. For some months this enlarged force has been cruising for the instruction of officers and men. Now the First Lord of the Admiralty has promised that two of the protected cruisers shall be withdrawn, and their places taken by a couple of the new armoured ships of greater speed, better protection, and more powerful offensive qualities. In this manner this squadron has been evolved without a suggestion that it is intended as a fighting force. This, however, is its *rôle*, in addition to the instruction of the *personnel* in time of peace. It is now to have two ships of war which are practically battleships in disguise. Although the Admiralty assert that it has reached its maximum strength, it would occasion no surprise if three or four battleships were allotted to it, not all at once, but gradually. It would then become an additional adequately constituted squadron for home defence. In this manner we should evolve an additional naval force ready for war, and why should it not be sent to cruise frequently in the North Sea, where Germany at present reigns supreme? We

cannot persist for ever in our failure to recognize the German menace in these waters, and it may be that this is the diplomatic method of the Whitehall authorities of meeting the emergency without making a parade of their foresight.

Lord Selborne has made another most important announcement. He remarked in his annual statement:—

Specimen squadrons.

"In respect of the battleships, the policy of the Board is gradually to change the composition of the Home, Channel, and Mediterranean Squadrons, so that, like the China Squadron, they shall be composed of homogeneous classes of battleships."

This raises a most interesting subject that has been too long neglected. For nearly three decades we have built our men-of-war in groups, at first in small groups, but latterly in large ones. The British Navy consists of a large number of classes of ships—classes of battleships, armoured cruisers, protected cruisers, sloops, and gunboats. Since 1876 the *Renown* is the only fighting-ship constructed which has no sister vessel, and is therefore isolated. No more conclusive evidence could be desired of the importance which, in theory, has been attached to homogeneity in the Royal Navy. It is a remarkable fact, on the other hand, that the authorities, having obtained these sister ships, have made it a practice to defeat one of the main objects which was in view when they were laid down in definite sequence, and have persisted year after year in constituting our squadrons as though they were naval museums, each

containing as many specimens as possible of each type of man-of-war. Consequently, while there is no Power which possesses a complete force as homogeneous as that of Great Britain, there is none which has more consistently squandered in disorganized confusion the fruits of its forethought and the skill of its constructors.

Awakening abroad.

For years past our neighbours, France, Russia, Italy, and Germany, continued to prepare a new design for practically every vessel which was laid down, but since the beginning of the nineties they have gradually come to see the error of their ways, and now the constructors of the world are following the British example in varying degree, and, having evolved a satisfactory design, duplicate it and reduplicate it, as we have been in the habit of doing. It is difficult to believe that these rivals in the all-world naval handicap will similarly follow our example in so assorting their men-of-war that they will in an engagement lose all the advantages that homogeneity confers. The tendency towards the group system is nowhere so marked as in the great fleet which, under the influence of the Kaiser, is to make Germany one of the great naval Powers. This is evidence of the care and business ability which is being devoted to the creation of that country's fleet. Among battleships they have the four *Badens*, the four *Worths*, the five *Kaisers*, and the five *Wittelbachs;* among coast-defence vessels, the eight *Siegfrieds*, all more or less alike; among cruisers, the five *Freyas* and the ten *Gazelles*. The ships are formed into homo-

geneous squadrons. In France the same desire for greater uniformity may be seen, though the frequent changes at the Ministry of Marine delay its development; and across the Atlantic, amid all the disagreements of the Board of Construction, there is the same tendency, with which, however, the divergent views of the members on several vital questions interfere. The Powers of the world are falling into line, our example is being taken, and in time all the navies will consist of a number of large, well-differentiated groups of men-of-war, each comprising a varying compromise of all the desiderata—a full quart, so to speak, which naval constructors are never weary of trying to press into a pint measure.

Advantages of the "Group System."

What is the advantage of the group system of construction? it may be asked. There are, in the first place, certain economies in design and construction. The small and quite inadequate staff at Whitehall could not cope with the work if each vessel had to be of distinct design. It is not a simple matter to plan a man-of-war. After the requirements of the Lords of the Admiralty have been stated, the constructors have to manœuvre to produce within the limits laid down a ship with the power of speed, attack, and defence required; and if the form of hull be a departure from precedent, experiments will have to be carried out at Haslar with small wax models on a system inaugurated years ago by Mr. William Froude. Every detail of the ship has its own drawings carefully prepared to scale, and these run to hundreds, and

involve thousands of calculations. It must be evident, therefore, that if the Admiralty decide to lay down six or eight sister ships, immense labour and expense are saved, and, moreover, the work of design is expedited. In the actual building of the vessels this uniformity is also an advantage, since, as has not infrequently happened, if the progress of one of them is unexpectedly expedited and another retarded, it is possible to take the guns or armour-plates of the latter and utilize them on the former. From the time that the keel-plates are laid to the date when the maiden pennant is hoisted, it proves a convenience and an economy that each ship should be of similar design. In the drafting of the crew, in the disposition of stores, in the filling of the magazines with ammunition, and in a number of other ways, the policy confers benefits on those most intimately concerned. Again, an officer, or seaman, stoker, artificer, or other mechanic, having once served on board one of a particular class, is at once familiar with all the sister men-of-war, and, in case of sudden mobilization, can fall into his place in the little floating kingdom without confusion or delay.

Uniform speed.

Ships of the same group possess approximately the same speed, and in this respect an admiral who has the good fortune to command a squadron comprising vessels with identical rates of progress and identical manœuvring capacity, obtains tactical and strategical power which may mean victory against a foe numerically superior, but lacking in his fleet the quality of identical speed which simplifies all orders and con-

solidates the force, while relieving the admiral and all the officers of the squadron of problems of a mechanical nature, which are better banished when it comes to a fierce fight. The tactical advantage of uniform speed was never more effectively demonstrated with the modern man-of-war than in the encounter between the two opposing fleets off the Lizard last autumn (1901), which marked the conclusion of the mimic war for the command of the Channel. Admiral Knyvett Wilson, though numerically weak, had a squadron of swifter and, for the most part, similar battleships, and he was thus in a position to assume any formation he thought desirable. He forced many of Admiral Sir Gerard Noel's ships to mask the fire of their consorts; he pressed round their face and enfiladed them; he caused confusion amongst them by his swift changes of position; he was ever the attacker because he was more mobile by at least two knots, and was more homogeneous. Admiral Noel had more ships than his opponent, but they were a museum of naval architecture; some could steam ten knots, others eleven, and one, the flagship *Alexandra*, twelve or thirteen. The speed of a squadron is that of its slowest ship, and consequently when Admiral Noel made a signal for a speed greater than that of the sluggard vessels under his command, confusion resulted in the attempt to do the impossible. His hands were tied, and his signal for more speed was a last attempt to prevent the enemy from benefiting by his uniformity and speed.

In the manœuvres of the year before the difficulties that assail an officer who commands a heterogeneous force were exemplified in the squadron under Vice-Admiral Sir Harry Rawson. He had opposed to him a superior force in numbers, but he had been handicapped by the attachment to his flag of several battleships which were of poor speed, and spoilt the homogeneity of his force. When it came to a chase he had to choose between two alternatives. He was the weaker force in the face of his enemy's complete fleet, and he had to take the chances of winning against the odds or running away, and could not do the latter except by casting off his slow ships, which impeded his progress. When, therefore, the foe came in sight in full power, he sent his slow ships into port, and with his other vessels, all homogeneous in build, he was able to show his heels to his adversary. He steamed on and on into the Atlantic, until practically the time limit of the manœuvres had been exhausted. Had the encounter been a real one instead of mimic, this would have been the only wise course open to him, and he would have waited for some later day in the hope of coming across the enemy in less strength, and thus taking him in detail.

Mobility.

As Captain Mahan has remarked, warfare depends for efficient control and efficient energy on the operations of concentrated bodies. The essential characteristics of these masses are force, which is gained by concentration of numbers and mobility, which is the ability to carry the force rapidly as well as effectively

from the centre to any point of the outlying field where action, offensive or defensive, becomes necessary. It follows that mobility can be most fully attained if all the ships are approximately of the same speed, with the same turning circle, and the same number of revolutions. Under such circumstances the admiral has no trouble so long as his vessels remain in good repair. Whatever his flagship can do the others are also fitted to do, and if they fail it must be through some accidental cause. If to six ships, as in the last manœuvres, are attached two battleships of inferior power, the tactical problems are involved, and the slow ships, which must set the speed for the whole squadron, may become a positive disadvantage and a danger. At the same time to insist too much on the advantages of homogeneity would be disastrous to naval progress, and the British authorities in building from six to eight of each type of battleship and cruiser have reached a happy mean. As a rule it would not be desirable to put more than about half a dozen battleships under the command of one flag officer, and he would then be in a strong position, supposing him to be anything of a tactician and to have a fair speed, to oppose a fleet numerically stronger, but hampered by several ships with poor steaming and manœuvring qualities.

Mechanical benefits.

One other not unimportant advantage of the group system of construction is almost self-evident. Let us suppose that an admiral goes into action with six battleships of the same type, and one of them is so

disabled after the first combat that she cannot again take her place in the line, while the remainder are defective in details. The admiral will determine to send the most injured ship into port to be repaired, but first he will seek some quiet place in which he can take from her any fittings that can be used in the less damaged vessels; for since in this respect there is in some degree a system of standardization this will be possible. It is within the bounds of possibility that by this means he will be able to carry out all urgent repairs in the remainder of his fleet, and, without returning to his permanent base, will be able to put to sea with a force diminished, it is true, by one unit, but able to strike again at the enemy, and, it may be, drive home without delay the blow delivered in the first onslaught. Too much importance may be attached to this point, because British men-of-war carry many spare parts, but it is not impossible that an admiral might find himself in the hypothetical situation named, and, in that case, it is evident that he would be able to profit largely from the fortunate composition of his force.

British "groups."

Every consideration favours the building of men-of-war on the group system, and in no other country can this admission be made with greater satisfaction than in Great Britain. In this respect we have been the pioneers. It is unnecessary to trace back the movement to its very early days. It will be sufficient to point to the principle as it can be seen in the ships on which the defence of the Empire would primarily

fall in case of war. The battle squadrons may be thus classified—

9 Majestic.	8 Royal Sovereign.
6 Canopus.	6 Duncan.
8 Formidable.	3 Commemoration.
6 Admiral.	2 Centurion.
2 Nile.	1 Renown.

Completed or building, we have fifty-one modern battleships, and it will be seen that they are divided up into large classes, the individual members of which are very similar, although not in all cases absolutely alike. For the most practical purposes they may be regarded as duplicates in each instance of the original design. The same principle is carried into the construction of cruisers, but homogeneity is a matter of much less importance in scouts and commerce-destroyers than in ships which are intended to "lie in the line." It is probable that the new armoured cruisers with their heavy guns and ample protection might be called upon to reinforce the battle squadrons, and it is therefore matter for congratulation that they are being built in classes. The main groups of cruisers may be thus indicated—

16 County class (armoured).	4 Drake (armoured).
6 Cressy (armoured).	2 Powerful.
4 Ariadne.	4 Andromeda.
7 Australia.	4 Crescent.
4 Edgar.	2 Blake.
2 Encounter.	3 Highflyer.
4 Arrogant.	9 Diana.

8 Astræa.	11 Æolus.
10 Apollo.	4 Forth.
4 Amphion.	11 Pelorus.
9 Pallas.	

We possess also a number of smaller cruisers; but the above list, though it takes no account of them, comprises the principal scouts of the British fleet, and supplies confirmation of the contention that the British constructors have been consistent in adhering to the group system in all types of warships, for even sloops and gunboats have been designed in families. In this manner we have acquired a marine force which excels in effective power that of any nation out of proportion to mere numerical superiority, provided the ships, and the battleships in particular, are organized on some scheme that is consistent with the principle which has regulated their construction.

Naval "museums."

Unfortunately we have only to turn to the official list of the British squadrons in commission for proof that little regard has been paid to such considerations in the disposition of the vessels. In the Mediterranean are five different types of battleships, even if the *Hood* is included in the *Royal Sovereign* class. There are three of the *Majestic* class, one of the *Canopus*, three of the *Royal Sovereign*, four of the *Formidable*, including the *Irresistible*, which has just been commissioned, and one *Renown*. In the Channel Squadron we have some approach towards a model force, since it includes six *Majestics*, and only one of the *Royal Sovereign*; it is too weak, weaker by one unit than it was a few months

ago, but that is another matter. The Reserve Squadron, the real "Home Guard," is a most extraordinary collection of heterogeneous units of various designs, armaments, and speeds—a crowd of nondescript ships. Of the other squadrons the most important is that in the Far East. The authorities have lately acted up to their principle on this station. Within the past few months the battle squadron has been reorganized on sensible, business-like lines, and it is satisfactory that there is to be a similar rearrangement of other squadrons. Last year we had there two vessels of the *Barfleur* type, the *Barfleur* and *Centurion*. These have now been brought home, and for the first time the Admiralty have secured a homogeneous battle force by sending out in their places the *Albion* and the *Glory*. The battleships on the China station now are four sisters, the *Albion*, *Glory*, *Goliath*, and *Ocean*. On neither of the other five stations are there any battleships; the squadrons consist of a selection of cruisers that appear to have been disposed without any regard to their individual powers, although from the list (see p. 88) it will be evident that the task of setting aside certain cruisers for certain squadrons, so as to arrive at some measure of uniformity, would present few difficulties.

It is subject for congratulation that the Admiralty are making a serious effort to reorganize the battle squadrons of the British Fleet.

CHAPTER V

THE BALANCE OF NAVAL POWER IN THE FAR EAST

THE ANGLO-JAPANESE TREATY

"Splendid isolation."

So deep-seated had become the British attachment to the much-boasted "splendid isolation," that in this country alone was there any difference of opinion on the wisdom of the treaty concluded with the youngest and not least virile of naval Powers of the world. Europe was in no doubt as to its potent influence for peace; even Russia and Germany made some pretence to welcome it. In this country the agreement was criticized on the ground that it imposes a heavy obligation on Great Britain without adequate compensating advantages. It was urged that this country should not bind herself to defend the territory of another kingdom or support it in defence of its interests, though they be mutual interests, without a clear conception of benefits to be gained thereby. Those who refused to approve of the Anglo-Japanese alliance conveniently forgot that the "splendid isolation" has been little more than a useful political phrase. So far as it indicates the loneliness of Great Britain if attacked by any Power, or combination of Powers, it is a correct representation of facts. Hitherto

we have entered into no defensive compact; but, on the other hand, we have for years had obligations of a most serious character. By a series of treaties stretching back for several hundred years, we are pledged to maintain the integrity of Portugal against a world in arms. This understanding has been quite lately ratified once more. We are bound to Belgium by an undertaking under which, in the words of Mr. Gladstone, "we should have to act, without any stipulated assurance of being supported from any quarter whatsoever, against any combination, however formidable." Sweden or Norway and Greece can claim our protection under certain circumstances in accordance with treaties of less than fifty years ago. By a peaceful agreement, which has survived even the strain of the South African War, we have also covenanted to employ the British Fleet in protecting the shores of Italy inviolate if she be attacked. It is to our interest to do all in our power to maintain the *status quo* in Europe and in the Mediterranean, and we have not hesitated to assume heavy burdens to promote peace and our supremacy in the Latin lake.

For several years past—in fact, since the Siberian railway began to creep towards its ice-free port, and Russia redoubled her efforts to obtain a dominating influence in Chinese affairs—it has been recognized in Europe that the centre of diplomacy was shifting eastward, and that there lay the greatest menace to the peace of the world. The struggle in this quarter practically dates from the treaty of Shimonoseki. Then

Japan was robbed of her just spoils of war. She had fought her fight with China, and had gained the right to dictate terms. She claimed the peninsula of Liao Tung for her own. Then Russia showed her hand, and, with the assistance of her ally, France, and of Germany, she robbed Japan of her just reward; and within a year or two had herself appropriated the territory. The incidents of subsequent years are too familiar to need recapitulation. Germany, France, and even England, seized various *points d'appui*. It is true, this country at first delayed to join in the grab of sites, and was then satisfied with a lease of Wei-Hai-Wei. The modesty of this demand on China was not fully evident until the spring of 1902, when it was announced by the British Government, on the authority of their naval and military advisers, that the territory was unsuitable as a fortified base, and that its natural disadvantages for such a purpose could only be conquered at great and disproportionate expense.

The Concert of Powers in the East.

Since this "marking off" of sites was effected, the Concert of Europe has been busy exchanging diplomatic assurances in favour of the maintenance of the integrity of China and the preservation of the commercial policy of the "open door." All the Powers have been in apparent agreement upon these two lines of policy. At the same time, Russia has been busy plotting for Manchuria, and Germany has been setting up a military and commercial organization in the Yang-tse Valley, the sphere of influence which Great Britain definitely reserved for herself some years ago. In view of the

discord between the avowed and the real policies of Russia and of Germany, it is apparent that, although the Czar's Government has not yet filched Manchuria, or laid a heavy hand on Korea, and though Germany's position in the Yang-tse Valley is undefined, a train of powder lies ready to the hand of the careless or scheming statesman. It has been only too evident of late years that only a spark was needed to set the Far East ablaze. The quiet which reigns at present is more apparent than substantial; and beneath the semblance of concerted action by the Powers is a stream of diplomatic chicanery that may at any moment undermine and sweep away the flimsy Temple of Peace.

The British squadron.

Each of the Powers has hurried ships out to the Far East in the past few years. Though Great Britain has for the time lost her old-time supremacy in those waters, much has been done to strengthen the forces at the command of the admiral of that station. It was a revelation to those who were clamouring of our weakness in the Mediterranean in June, 1901, to learn that, in the opinion of the Admiralty, for the first time in British history our needs in the West were less urgent and less threatening than those which claimed attention in the Far East. Captain W. W. Hewitt commissioned the new first-class battleship *Albion* at Chatham for service on the China station. The hoisting of a maiden pennant is always an interesting occasion, since it marks the stage when a ship passes from the dockyard as a fighting unit into the Fleet—an addition to the maritime strength of the British Empire. It might have been

inquired quite naturally why, in the face of the outcry of want of strength in the Mediterranean, this latest leviathan was sent to follow three of her sisters and the new armoured cruiser *Cressy* to the Far East? Ten years ago such an official order would have been received with amazement. Last year it was regarded as a disposition in the ordinary course of events. In 1891 we had not a single battleship in China waters. Now there are four. The explanation of the transformation is simple. Where trouble is brewing, there diplomacy holds is the centre where it is essential to concentrate a large naval force. Thus it has come about that ship after ship has passed from the West into the distant East, with the result that the fleet in these seas comprises the following ships, which may be compared with profit with those of ten years ago:—

BATTLESHIPS.

1892.	Tons.	1902.	Tons.
None.	—	Glory, Ocean, Goliath, Albion	12,950

CRUISERS.

1892.	Tons.	1902.	Tons.
Imperieuse	8,400	Cressy	12,000
Leander	4,300	Terrible	14,200
Mercury	3,730	Blenheim	9,000
Severn	4,050	Endymion	7,350
5 small cruisers and 9 gunboats.		Orlando	5,600
		Amphitrite, Argonaut ...	11,000
		Eclipse, Talbot	5,600
		Arethusa	4,300
		Astræa	4,360
		Pique	3,600
		20 small cruisers, sloops, and river gunboats.	
Destroyers—none.		Destroyers—6.	

The disposition of ships depends on the action of diplomacy almost as much as on strategical conditions. Where Great Britain is asserting or defending her rights, there her power must be sufficient to gain respect for her representations. Behind the Admiralty in the decision to strengthen the China Squadron was the Foreign Office; and it was entirely due to the shipbuilding delays that the augmentation on the China station had for a time to be made at the expense of other squadrons.

It is under these conditions that England has welcomed Japan into the circle of civilized States, and accepted her aid in the preservation of peace in the extreme East.

Japan has been accurately described as the Great Britain of the East. The restless seas are her bulwarks. Supremacy afloat is as essential to her as to ourselves. Peace is her highest aim. In little more than a quarter of a century the country has leapt into a condition of civilization carefully moulded on Western models. The Japanese have become familiar in every capital of Europe. They have been everywhere, seen everything, learnt all they could, and taken back with them the best the old countries with centuries of civilization behind them had to offer. The Mikado has become a constitutional monarch, and the country has its representative system of Government. With a rapidity that is astounding it has built up a large trade, raised and equipped a great army, acquired a large mercantile marine, and constructed a fleet which, for its size, is as efficient and well-trained as any in the world. This

sudden growth has been maintained on a singularly small national capital. The war against China put a strain upon the country, and a conflict with one or more European Powers might jeopardize the fabric which has been built up with such enterprise, sagacity, and rapidity. It is no wonder that Japan has rejoiced at the conclusion of an agreement which minimizes so materially the danger of an armed conflict.

The British gain.

On the other hand, the advantage which is gained by this country is not less tangible. Since the extraordinary Russian naval programme of 1897, every available ship of the Czar's fighting forces has been despatched to Chinese waters. With dogged persistency Port Arthur has been transformed into a formidable naval base. The Russian bear has hung round China, threatening her, cajoling her, and persistently undermining British influence by the exhibition of her power and the smartness of her diplomacy. As Great Britain must marshal her most deadly weapons of war in the Mediterranean and the home seas, Russia has massed her navy off the shores of China. For some time it has been evident that Great Britain, in view of claims nearer home, can never hope to do more than maintain a bare superiority over the Russian Squadron in the Far East. This must be our aim, but so far we have failed to attain it, owing to delays in the completion of ships. Russia's navy for two or three years past has been the dominant factor, and there has been the additional menace of a possible alliance between Russia and Germany, with France acquiescent in the

background. Under such circumstances this country would have been powerless to maintain her traditional policy. We should have been compelled to bow before the stronger force. By the treaty which has been concluded with Japan this danger has been swept away. As Great Britain is and must be the supreme naval power of the West, Japan is and must remain the supreme naval power of the Far East. The domination of the one is as essential as the domination of the other. The alliance which has now been sealed guarantees Great Britain and Japan against any possible combination to their detriment. Their aims run on absolutely parallel lines, and it is only natural that they should have entered into a defensive agreement. With two strokes of the pen Lord Lansdowne and Baron Hayashi have more than doubled the effective forces which can be employed against any two nations which may seek to disturb peace in the Far East, by a policy of disintegration.

Aims of the Treaty.

In his covering despatch to Sir Claude MacDonald, Lord Lansdowne very clearly explained the provisions of the agreement:—

"We have thought it desirable to record in the preamble of that instrument the main objects of our common policy in the Far East to which I have already referred, and in the first article we join in entirely disclaiming any aggressive tendencies either in China or Korea. We have, however, thought it necessary also to place on record the view entertained by both the high contracting parties, that should their interests as above described be endangered, it will be admissible for either of them to take such measures as may be indispensable in order to safeguard those

interests, and words have been added which will render it clear that such precautionary measures might become necessary and might be legitimately taken, not only in the case of aggressive action or of an actual attack by some other Power, but in the event of disturbances arising of a character to necessitate the intervention of either of the high contracting parties for the protection of the lives and property of its subjects.

"The principal obligations undertaken mutually by the high contracting parties are those of maintaining a strict neutrality in the event of either of them becoming involved in war, and of coming to one another's assistance in the event of either of them being confronted by the opposition of more than one hostile Power. Under the remaining provisions of the agreement, the high contracting parties undertake that neither of them will, without consultation with the other, enter into separate arrangements with another Power to the prejudice of the interests described in the agreement, and that whenever those interests are in jeopardy they will communicate with one another fully and frankly.

"The concluding article has reference to the duration of the Agreement, which, after five years, is terminable by either of the high contracting parties at one year's notice.

"His Majesty's Government have been largely influenced in their decision to enter into this important contract by the conviction that it contains no provisions which can be regarded as an indication of aggressive or self-seeking tendencies in the regions to which it applies. It has been concluded purely as a measure of precaution, to be invoked, should occasion arise, in the defence of important British interests. It in no way threatens the present position or the legitimate interests of other Powers. On the contrary, that part of it which renders either of the high contracting parties liable to be called upon by the other for

assistance can operate only when one of the allies has found himself obliged to go to war in defence of interests which are common to both, when the circumstances in which he has taken this step are such as to establish that the quarrel has not been of his own seeking, and when, being engaged in his own defence, he finds himself threatened, not by a single Power, but by a hostile coalition."

The treaty specifies that its clauses become operative only in face of two or more Powers; but who can question that in a just cause the navies of the two countries would be found fighting side by side upholding the essential and mutual interests against a single Power? This alliance is a naval measure, and is the natural development of a sequence of events dating back to the middle of the last century.

Japan's navy.

With the keen insight which has distinguished the Japanese in their development, they went to France and Germany for the instructors of the reorganized army, and sought the assistance of the supreme naval Power in the creation of their navy. In view of the naval combination now effected it is not uninteresting to glance back to 1858, when Lord Elgin as British Minister steamed into the Gulf of Yeddo attended by a sufficient squadron of British men-of-war. He ratified on his visit to the Island Kingdom, then severely isolated from all intercourse with the outer world, the first of the series of commercial treaties which have tended to cement the friendship of the two countries. Having effected the object of his visit, Lord Elgin left behind him as a present to the Mikado a steamship

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which could be used as a yacht. This present from Queen Victoria was not absolutely the first steam vessel possessed by the Japanese, for the Dutch Government had already given them a small paddle-boat. Even in these early days the Japanese showed their haste to perfect themselves in the mastery of mechanical science. They hastily jumped to the conclusion that after a short period of instruction from the European crew they, who had been accustomed to handling nothing more mechanical than the Dutch models of sailing-ships of the seventeenth and eighteenth centuries, could readily solve all the problems which their new possession presented. Casting off the tutelage that reminded them of their backward condition, they manned the new ship—a paddle-wheel "packet"—and set her head to sea. It happened that they had learned how to start this new toy, and could steer her with some accuracy, but Admiral Fitzgerald, who tells the story, says that they did not know, or had forgotten, how to stop her. Consequently with a full head of steam they went ahead until their inclination led them to wish to return to port. Then they discovered that they could not stop the machine they had set in motion. Nothing remained for them to do but to steam round and round the Gulf of Yeddo until the fires had burnt out and the paddles ceased to revolve.

British assistance.

When Japan threw off the antiquated methods of the past to cultivate Western civilization, she was not long in discovering that her security depended upon the possession of an adequate navy. She naturally looked to Great Britain for aid, and thus it came

about that British brain, British muscles, and British capacity for organization were for thirty years employed in creating a fleet for Japan and in training officers and men to man it. From 1870 down to a quite recent date boys intended to officer the Mikado's ships cruised in British men-of-war, and British officers went to the budding Empire to implant the methods of Western naval organization. Admiral Sir Richard Tracey, Vice-Admiral Archibald L. Douglas, Vice-Admiral A. K. Wilson, V.C., and Admiral J. Ingles—now retired—all devoted themselves at different times to the task of establishing a naval organization, and setting up well-planned training colleges for officers and men. It is interesting to recall that Admiral Douglas, who has relinquished his seat at Whitehall as a Lord Commissioner of the Admiralty to go to the North American Station to assist in building up a Naval Reserve on that Continent for the British Navy, was commander of the Mission of British Naval officers who laid the foundation of the present system of the Japanese Navy. For two years Admiral Douglas was at the head of the Japanese Naval College at Yeddo, and as lately as 1894, a few months before the outbreak of war, Admiral Ingles was filling the same appointment. All our experience and knowledge were placed at the disposal of the Japanese, and the result is that while some improvements have been initiated, the uniforms, equipment, and methods of the Mikado's Fleet are very similar to those of the British Navy.

List of Japanese men-of-war.

In return for this service the Japanese gave British shipbuilders orders for the construction of practically

all the ships they required. While Admiral Douglas and his colleagues were busy in Japan training officers and men, and almond-eyed midshipmen were drilling in British ships, Sir Edward Reed, at one time Director of Naval Construction in this country, was occupied in designing ships for the new fleet. Such as they were, the vessels that conquered China in 1895 were mainly of British design and British construction. Eloquent in lessons to the navies of the world as those hostilities proved to be, they left their greatest mark upon the national policy of Japan. The whole of the indemnity which the Chinese Minister in London paid over to the representative of the victors was devoted to the building of new ships. What more natural after her former experience of British assistance that the Mikado's advisers should turn to this country for the expenditure of this large sum? In the intervening years Mr. Philip Watts, the present Director of Naval Construction (who until recently was attached to the firm of Armstrong, Whitworth and Sons), and other former members of the Royal Corps of Naval Constructors, have added fresh ships to the Mikado's Navy. These vessels are among the most wonderful engines of war constructed in the past ten years. Powerful in offence, they are not less effective in defence, they possess speeds in excess of the rates of British ships, and their gun-power has been the subject of many lectures to the British Admiralty. No navy in the world possesses two groups of ships more modern in equipment than the battleships and armoured cruisers of the Japanese Navy which are enumerated in the following pages.

BATTLESHIPS.

Name.	Tonnage.	Horse-power.	Date of launch.	Speed.	Guns.
				Knots.	
Asahi ...	15,200	15,000	1900	18·0	4 12-in., 14 6-in., 32 smaller quick-firers.
Fuji ... / Yashima ...	12,320	14,000	1896	19·2	4 12-in., 10 6-in., 24 small q.-f.
Hatsuse ...	15,000	16,300	1899	19·11	4 12-in., 14 6-in., 32 small q.-f.
Mikasa ...	15,200	15,000	1900	18·0	4 12-in., 14 6-in., 32 small q.-f.
Shikishima...	14,850	14,850	1898	18·5	4 12-in., 14 6-in., 32 small q.-f.
Chin-Yen (ex Chen-Yuen)	7,220	6,200	1882	14·0	4 12-in. (Krupp), 4 6-in., 10 small q.-f.
Fusoo ...	3,717	3,500	1877	13·0	4 9·4-in., 4 6-in., 2 small guns.

COAST-DEFENCE SHIPS.

Hei-Yei ... / Kongo ...	2,250	2,400	1890	13·0	1 6·2-in. (Krupp), 2 5·9-in., 6 M.
Ping Yen ...	2,067	2,400	1890	10·0	1 10·2-in., 2 6-in., 8 small q.-f.

ARMOURED CRUISERS.

Asama ... / Tokiwa ...	9,750	20,550	1898	23·0	4 8-in. q.-f., 14 6-in., 19 small q.-f.
Adzuma ...	9,436	17,000	1899	22·1	4 8-in., 12 6-in., 19 small q.-f.
Idzumo ... / Iwate ...	9,750	17,300	1899 / 1900	20·5	4 8-in. q.-f., 14 6-in., 19 small q.-f.
Yakumo ...	9,850	16,000	1899	20·0	4 8-in. q.-f., 12 6-in., 19 small q.-f.
Chiyoda ...	2,450	5,700	1889	17·5	10 4·7-in., 17 small q.-f.

PROTECTED CRUISERS.

Akashi ...	2,700	8,500	1895	20·0	2 6-in. q.-f. (Armstrong), 6 4·7-in., 16 small q.-f.
Akitsushima	3,150	8,400	1892	19·0	4 6-in. q.-f., 6 4·7 in., 10 3-pr.
Chitose ...	4,760	15,500	1898	22·5	2 8-in. q.-f., 10 4·7 in., 16 small q.-f.
Hashidate / Itsukushima	4,277	5,400	1891	17·0	1 12·5-in. (Canet), 11 4·7-in., 16 small q.-f.
Kasagi ...	5,416	15,797	1897	22·5	2 8-in., 10 4·7-in., 18 small q.-f.
Matsushima	4,277	5,400	1890	17·5	1 12·5-in. (Canet), 11 4·7-in., 22 small q.-f.

PROTECTED CRUISERS—*continued.*

Name.	Tonnage.	Horse-power.	Date of launch.	Speed.	Guns.
				Knots.	
Naniwa ...	3,650	7,235	1885	18·72	2 10·2-in. (Armstrong), 6 5·9-in., 12 small q.-f.
Saiyen ...	2,300	2,800	1883	14·5	2 8·2-in., 1 5·9-in., 14 small q.-f.
Suma ... Idsumi ...	2,700	8,500	1896	20·0	2 6-in., 6 4·7-in., 16 small q.-f.
Takachiho ...	3,700	7,500	1885	18·7	2 10·2-in. (Armstrong), 6 5·9-in., 12 small q.-f.
Takasago ...	4,160	15,500	1897	23·0	2 8-in., 10 4·7-in., 18 small q.-f.
Yoshino ...	4,180	15,000	1892	23·0	4 6-in., 8 4·7-in., 23 3-pr.
Three building	3,200	8,000	1901	—	8 4·7-in. q.-f., 14 small q.-f.

British-built.

Japan, it will be seen, has centred her desires on the possession of an adequate collection of heavily armoured vessels. Of the six ships which form her battle squadron (for the captured Chinese vessel *Chin-Yen* is of minor importance) the *Yashima* and the *Hatsuse* have been built at Elswick, the *Mikasa* at Barrow, the *Fuji* and *Shikishima* on the Thames, and the *Asahi* at Clydebank. The *Fuji* and *Yashima* are a modification of the *Royal Sovereign* type of Sir William White's design, while the other four are improvements upon the same distinguished constructor's *Majestic* class. These six ships, however, possess a heavier gun-power than any battleships in the British Navy. In addition to the four twelve-inch weapons which they carry in common with our own ships, they have two more six-inch guns. Allied with this offensive power is a capacity for defence which is not less admirable. Passing over the older battleships

and the small vessels for purely coast-defence duties, the seven armoured cruisers are worthy of attention. For all practical purposes six of them are battleships in disguise, with armoured belts and bulkheads, and excellent protection for the guns' crews. Until 1898 no attempt had been made to introduce into the British Navy vessels in any way comparable to these in gun-power, protection and speed. The six larger cruisers are provided with four eight-inch quick-firing guns each, and twelve or fourteen six-inch pieces. Four of these cruisers were designed by Mr. Watts and built at Elswick, the *Tokiwa*, *Asama*, *Idzumo*, and *Iwate;* the other British cruiser is the *Chiyoda*, a small ship which was built at Clydebank. For diplomatic reasons Japan had the other two vessels constructed at Stettin and St. Nazaire, and thus quieted the jealousy of Germany and France. With these two exceptions, the battle-fleet of Japan is British, and nothing further need be said of the manner in which the ships have been built; but it may be added that the Japanese have shown a wonderful and praiseworthy aptitude in maintaining in the highest efficiency the machines they have acquired.

The fleet also includes twenty-seven protected and partially protected cruisers, eighty torpedo-boats, sixteen torpedo-boat destroyers, and a variety of auxiliary ships, necessary to the full equipment of the fleet.

The personnel.

Concurrently with the construction of ships, Japan has trained officers and adequate crews to manage them. The Japanese are born sailors, and have taken

to the conditions of life afloat with something of that happy spirit which distinguishes the British bluejacket. The "Jappers," as they are known to our men, take a pride in their ships, and this is a bond of sympathy between the quarter and the lower deck. We have succeeded in doing for Japan what Captain Lang and other British officers failed to do for China. Every one who has the slightest acquaintance with the Japanese agrees in extolling their qualities as fighters. Admiral Fitzgerald, who knows them well, describes them as excellent men-of-warsmen in every respect, courageous, resourceful, and cool in face of danger.

Referring to the war with China, this officer states : *

"The blockade of Wei-Hai-Wei during a winter of arctic severity showed a tenacity of purpose, a patriotic devotion to duty, and an utter disregard for hardships and fatigue which are unsurpassed in any naval records I have read. As an instance of the pluck and determination shown by the Japanese Navy on this occasion, it may be mentioned that a lieutenant in command of one of the torpedo-boats was frozen to death at his post; and there were many other episodes during the war which showed with what heroic contempt for the terrible hardships of a winter campaign in North China the Japanese naval officers and men were animated. The pluck and hardihood are, no doubt, inherent in this race of sturdy warriors; but all the dash, courage, and endurance in the world will not enable men to work modern warships and torpedo-boats without previous training and experience; and it was in recognizing this fact that the Japanese statesmen showed

* *National Review*, November, 1900.

a wisdom and foresight which could scarcely have been expected of men with their antecedents.

"It has often been said that the Japanese are mere imitators of European methods, that they have no initiative, and can only imitate up to a certain point, at which they stop and go no further. It is quite possible that during the early stages of the opening up of the country and the first contact with European ideas and methods this may have been true; but that was before they understood the reasons for the numerous innovations they were asked to adopt. They copied first and found out the reason afterwards, which seems to be quite the right way to learn a new language—learn to speak first, and then study the grammar afterwards. However this may be, it is quite certain that they are now a long way past the imitative stage, and in some matters they appear to have improved upon the methods of their instructors."

With further reference to the *personnel*, Admiral Fitzgerald, who was with Lord Elgin in 1858 on the occasion already referred to, and again visited the country in 1881 and 1899, states:—

"The first thing that strikes one is the immense earnestness of officers and men, a determination to excel, regardless of trouble and in spite of occasional mishaps. There is no shilly-shallying, no dilatoriness; whatever they do they seem to do with all their hearts and as if they liked it. The pay of both officers and men is very small compared with that of other nations, but they appear to be thoroughly well-contented."

These are the men who will be called upon to fight side by side with the British bluejackets if the rival powers in the Far East have sufficient temerity to court

a contest. Japan now stands alone without any of the artificial props which were necessary at first. Not only have the Japanese mastered the intricacies of mechanical engineering, the torpedo, the gun, and all sailor-like lore, but they have established dockyards, in which they are now constructing their own warships, and (surely typical of their enterprise) are putting together and fitting out for sea the additional gunboats required by the United States to guard their new possessions in the Pacific.

Japan's mimic war.

In the West there seems to be an impression that the fleet of Japan is a mere matter of show, and that the weapons that have been acquired are handled with indifferent skill. To illustrate how false such ideas are an account of the last manœuvres of the fleet may be of service. It has been compiled by Lieutenant Orlo S. Knepper of the United States Navy,* and since no details of these exercises of the Mikado's men-of-war have been published in this country, the description may prove of value as an indication of the serious manner in which the Japanese are preparing for the eventuality of war.

"The Japanese naval mobilization and manœuvres during the spring of 1900 were by far the most comprehensive of any manœuvres undertaken by that country. Practically the entire navy, *matériel* and *personnel*, participated, and in general the results were claimed to be satisfactory. The manœuvres were executed with the greatest secrecy, no merchant ships being allowed near the manœuvre-grounds, and none of the foreign men-of-war in the vicinity

* "Naval Progress," July, 1901.

were invited or given permission to attend. A strict censorship was placed on the press, and in consequence the following account must be more or less meagre and, possibly, in some instances, inaccurate.

"The chief object of the manœuvres seems to have been to exercise and test a general scheme for the mobilization of the entire fleet and for the naval defence of Japan. Viewed from this point much valuable information must have been obtained. No new tactical or strategical problems were tried, and all movements were attended with so much secrecy that little in that line can be learned from the manœuvres by the 'outsider.'

"Previous to the manœuvres the approaches to the principal ports were mined.

The official record.

"The only known official record of the manœuvres obtainable is the following brief account published by the Japanese Navy Department :—

"'First Period.

"'The operations of the first part of the grand manœuvres consisted in the mobilization of the naval ports and of the ships of war. These operations were commenced on the 27th of March; in the early hours of the morning of that day the order to put in execution the plan of mobilization was simultaneously transmitted to the Commander-in-Chief at the ports.

"'The ports of Yokosuka and Sasebo completed the armaments of their ships on the 1st of April. The vessels thus equipped for war were concentrated in the port of Kure on the 2nd of April, and on the 7th the ships comprising the offensive squadron proceeded to Kagoshima, where, from the 8th of April, they were engaged in preliminary exercises.

"'Second Period.

"'The actual operations of the second period were begun on the 16th of April. The following morning at daybreak

the offensive squadron entered the Inland Sea by the Straits of Shimonoseki, and encountered in the neighbourhood of the Bay of Hiroshima some of the enemy's cruisers acting as scouts.

"'This day the offensive squadron passed the night cruising outside the Bay of Hiroshima, watching the enemy's movements. But the following day the defensive squadron, profiting by a dense fog and occasional showers of rain, succeeded in eluding the vigilance of the enemy, and executed a sortie towards the south, passing through the Bungo Channel. After these operations the manœuvres were temporarily suspended.

"'On the 23rd of April the two squadrons left, one for the eastern part of the Inland Sea, and the offensive squadron for the Tosa Sea. Two days later (on the 25th) the operations were resumed.

"'An encounter between the two squadrons took place on the 28th in the Kii Channel, from which the defensive squadron retired toward the Inland Sea, and made attacks upon the invaders by means of torpedo-boats.

"'At the close of these operations the grand manœuvres were suspended.'

Director of the manœuvres.

"The scheme of mobilization, plan of operations, and all decisions as to defeat or victory were entirely in the hands of Admiral Viscount Ito, the hero of the victory at the Yalu. Admiral Ito, as chief of the naval commanding staff, is the direct naval adviser of the Emperor, which, with his actual rank (full admiral), makes him somewhat overshadow the Minister of Marine, who is only a vice-admiral (Vice-Admiral Yamamoto). In all events Admiral Ito had supreme command.

"The approximate date of the operations was announced in the newspapers some months beforehand, so that the mobilization was robbed of much of the value it would otherwise have had. The actual orders for the mobilization were issued from the Navy Department at Tokyo at 4 a.m.

on the 27th of March, 1900. The same day Admiral Ito and his staff left Tokyo for Yokosuka.

"The following was the plan of mobilization, and the operations were performed in the order given:—

"(1) The calling out of the naval reserves and the coaling of the ships in the reserve.

"(2) The summoning of extra hands to work in the dockyards.

"(3) The completion of all ships with coal, provisions, ammunition, stores, etc., as if for actual war.

"(4) Organization of signal and look-out stations round the coast, for war.

"(5) Protection of harbours and approaches by booms, submarine mines, etc.

"(6) Removing all portable fittings of wood from ships.

Reserves. "Unfortunately no figures are available as to the exact number of reserves called out. The following table gives the reserve list on the 1st of January, 1899, and may be of interest—

	Flag officers.	Commanding officers.	Officers.	Staff officers.	Petty officers.	Men.	Total.
First reserves ...	28	33	31	27	190	1821	2130
Second reserves ...	3	45	56	25	—	1741	1870
Total ...	31	78	87	52	190	3562	4000

"In Japan the country is divided into districts, and each district furnishes its quota of reserves. The reserves seem to have been called only from certain districts, and even from these districts the number that actually reported is not known. On the 26th of March an order was issued calling the reserves from the Kioto, Osaka, and Kure districts, and on the 27th from the Hakodate and Takamatsu districts. On the 28th of March the reserves from

the Shidzuoka district were called, and on the 29th those from the Utsonomiya district. On the 5th of April, 442 reserves reported at Kure.

"The reserve officers seem to have been employed only on shore and in connection with the mining of harbours, but of their actual service little can be learned. One of the local papers stated that the reserve officers began duty on the 6th of April.

"The dockyard forces were all increased, so that the arsenals were put on a war-footing, and were able to work to their full capacity. At Kure the number of workmen was said to be 8000. At Yokosuka on the 23rd of March the vice-admiral commanding advertised for 400 additional workmen for the new naval port of Maidzuru, but there is some doubt about these men having been obtained, and certainly they were not sent to Maidzuru.

Judges and umpires.

"As before stated, Admiral Viscount Ito was the supreme judge. His staff was very large, including about fifty officers, and every ship of both the attacking and the defending squadrons had an umpire on board. The principal assistant of Admiral Ito was Vice-Admiral Shibayama, the head of the Japanese Naval Academy, who was detailed to watch the progress of the operations from the southern naval base of Sasebo. The following officers of different grades held positions as umpires, judges, or inspectors, though this list does not necessarily include all officers serving in that capacity: 4 rear-admirals, 17 captains, 20 commanders, 11 chief engineers. It is said that junior engineers were detailed for all engine-rooms to watch the progress of affairs there.

"Twenty-three officers of the general staff of the Japanese Army were present on duty during the manœuvres. Some were on board ships, and others watched the operations from the coast fortresses. Lieut.-General Baron Y.

Oku, Commander-in-Chief of the military defences of Tokyo, arrived in Kure on the 5th of April, and witnessed the manœuvres from one of the ships. The coast fortresses are in the hands of the army, but the Navy is entirely responsible for the floating defences and submarine mining everywhere in Japan.

Composition of the squadrons.

"The active operations of the manœuvres were divided into two distinct phases, for each of which the squadrons were re-arranged. The first phase began on the 16th of April, and ended with the escape of the blockaded fleet from Kure on the 19th of April. (See Official Report.) During these operations the squadrons were as follows:—

Blockading squadron.	Blockaded squadron.	At Kure for coast-defence (not actively employed).
Fuji, battleship.*	Yashima, battleship.*	Fuso, coast-defence.
Chin Yen, battleship.	Tokiwa, armoured cruiser.*	Chitose, protected cruiser.
Asama, armoured cruiser.†	Takasago, protected cruiser.	Miyako, unprotected cruiser.
Chiyoda, armoured cruiser.	Yoshino, protected cruiser.	Chinchu, gunboat.
Akitsushima, protected cruiser.	Akashi, protected cruiser.	Chinpien, gunboat.
Hashidate, protected cruiser.	Yamato, unprotected cruiser.	
Itsukushima, protected cruiser.	Tatsuta, unprotected cruiser.	
Matsushima, protected cruiser.†	Ikadsuchi, destroyer.	
Takachiho, protected cruiser.	Inadzuma, destroyer.	
Kasagi, protected cruiser.	Yugiri, destroyer.	
Idzumi, protected cruiser.	Shiranui, destroyer.	
Toyohasi, depôt ship.	Kagero, destroyer.	
Yaeyama, unprotected cruiser.	Eighteen torpedo-boats.	
Murakumo, destroyer.		
Shinonome, destroyer.		
Akebono, destroyer.		
Two torpedo-boats.		

* Flagship of Commander-in-Chief.

† Flagship of second in command.

"From the above it is seen that the blockading or offensive fleet was greatly superior in heavy ships to the blockaded fleet, but greatly inferior in torpedo-craft. This same disparity is noted later on.

"The operations during the second phase of the manœuvres were to a large extent prearranged, and seem to have been largely a naval show for the Emperor.

"Admiral Ito and his personal staff remained at Yokosuka until the 3rd of April, when he embarked on board the *Toyohashi*, and proceeded to Kure. By this time almost all the entire mobilized fleet had gathered here, and the newly commissioned ships were inspected. On the 5th and 6th the different ships exercised at target-practice, and on the 7th the squadron separated, the defending squadron putting to sea for a week's preliminary evolutions, and returning to Kure on the 14th. The attacking squadron left Kure on the 8th, and arrived at Kagoshima on the 10th.

"During the stay of the attacking fleet at Kagoshima, a merchant-steamer, the *Miyajima Maru*, of about 1200 tons, collided with the *Kasagi* on the 13th of March. The *Miyajima Maru* was entering the harbour, and the cause of the accident was stated to be both the thick weather and the crowded condition of the harbour. No damage was done to the *Kasagi*, but the *Miyajima Maru* had to be beached to keep her from foundering.

Preliminary exercises.

"The preliminary exercises referred to in the official account seem to have been simple tactical evolutions, while special attention was paid to the drilling of scouts. The torpedo-boats and destroyers were drilled as distinct flotillas, and seem to have acquitted themselves well. Japanese officers expressed the opinion that destroyers of over 300 tons were most efficient vessels. Some minor breakdowns occurred, but nothing of importance, or that was not to be expected.

"Before taking up the manœuvres proper it is necessary to refer to the *Shikishima*. This vessel, built in England, reached Kure the day after the declaration of war, with a reduced or 'navigating crew' on board. This crew was increased to her full complement at Kure on the 18th, and the vessel joined the mobilized fleet on the 19th, too late, however, to take part in the first phase of the operations and in the sortie, so that it seems only fair to eliminate her from any calculations of the strength of the fleets during the first phase.

"The *Fuso*, newly repaired and commissioned, was used during the first phase for harbour-defence only, and did not take part in the sortie. Hence, assuming the *Chiyoda* for manœuvre purposes to be equal to the armoured cruisers, we have the following state of affairs. The attacking fleet was noticeably stronger than its adversary as regards heavier ships, but inferior in torpedo-craft. It seems fair to suppose that this condition of affairs was arranged to represent a foreign Power, possibly Russia, attacking Japan, and having for its immediate objective the central naval port of Kure. In that case the attacking squadron would be sure to be weak in torpedo-craft, as compared with the number of those craft in the Inland Sea, while it is not at all improbable that it would be stronger in heavy ships. Were the objective of such a squadron, operating from northern China, the port of Kure, at least a day could be saved by entering the Inland Sea through the Straits of Shimonoseki. This saving of time would be of the utmost importance, but the extreme risk of this undertaking, in view of the narrow and tortuous channel, and the formidable character of the fortifications at Shimonoseki, forbids the shorter route. In actual war a squadron operating against Kure would be forced to take the safer, but more circuitous, route

around the southern end of Kinshin and through the Bungo Channel to gain the Inland Sea. This route was adopted by Admiral Sameshima with the attacking fleet, despite the temptation to rush the Shimonoseki Straits, and thus gain a clear day's steaming; and it seems to be correct strategy, and accurately indicates the course likely to be adopted by a squadron operating from a base in northern China.

First phase of the manœuvres.

"When, on the 16th of April, 'war' was declared, the attacking squadron (4 armoured, 9 unarmoured, and 5 torpedo-craft) was anchored at Kagoshima, and the defending squadron (2 armoured and 5 unarmoured vessels, with 23 torpedo-craft) was at Kure.

"The attacking squadron immediately put to sea, heading north along the eastern coast of Kinshin. In the defending squadron, Admiral Inoue detached four cruisers (*Takasago*, *Akasahi*, *Tatsuta*, and *Yamato*) early on the 16th to act as look-out vessels. Of these, one was fitted for wireless telegraphy, and was thus presumably able to keep in communication with the Commander-in-Chief. Eight torpedo-craft left Kure the same day, and were presumably also employed as scouts or look-outs. The scouts of the opposing fleets met early on the 17th among the outlying islands in the Bay of Hiroshima, and a destroyer and cruiser action was fought, but nothing can be learned of the details.

"The weather on the 17th was unsettled, with occasional rain, and the passage of the blockading squadron across the Inland Sea must have been, under the circumstances, very risky. As the fleet approached the archipelago, the opportunities for a torpedo attack by the defending fleet were splendid, and the attacking fleet could scarcely have repelled a combined attack without suffering heavy loss. But before night Same-

shima seems to have had time to place his ships as desired, and the blockade was, in fact, established. The night was overcast and squally, and must have been an uncomfortable one for the blockaders, especially if they kept close to Kure. In view of the great danger from torpedo-boat attack, though, it is probable that Admiral Sameshima retired to the southward into more open waters for the night. At least one encounter took place between cruisers and destroyers on the night of the 17th. However, so far as can be learned, no vessels were reported as having been torpedoed.

"The following day the defending fleet, according to the official report, 'profiting by a dense fog and occasional showers of rain, succeeded in eluding the vigilance of the enemy, and executed a sortie toward the south, passing through the Bungo Channel.' From the extremely vague accounts it would appear that the blockading fleet was not long in discovering that the opposing fleet had escaped, and immediately gave chase, and succeeded in bringing the blockaded fleet to action. Of this action, however, nothing can be learned.

Suspension of hostilities.

"On the 19th hostilities were suspended, and the fleets returned to Kure. Vice-Admiral Inoue relinquished command of the blockaded squadron, and returned to his official residence at Kure. Rear-Admiral Kataoka shifted his flag from the *Tokiwa* to the *Yashima*, and assumed command of a reconstructed and much smaller defending squadron, consisting mainly of high-speed cruisers and torpedo-craft. An imperial squadron was also formed to accompany the Emperor. The remainder of the ships, under Vice-Admiral Sameshima, were reorganized as attacking squadron, whose *rôle* was to threaten the eastern entrance to the Inland Sea. The rearranged fleets were as follows :—

Attacking fleet.	Defending fleet.	Imperial squadron.
Shikishima, battleship.	Yashima, battleship.	Asama (His Majesty on board).
Fuji, battleship.	Tokiwa, armoured cruiser.	Miyako, flag of Admiral Ito.
Chin Yen, battleship.	Takasago, protected cruiser.	Akashi.
Fuso, coast-defence ship.	Yoshino, protected cruiser.	Yaeyama.
Chiyoda, armoured cruiser.	Kasagi, protected cruiser.	Kagero.
Akitsushima, protected cruiser.	Chitose, protected cruiser.	
Hashidate, protected cruiser.	Toyohashi, torpedo-depôt ship.	
Matsushima, protected cruiser.	Five destroyers.	
Takachiho, protected cruiser.	Nineteen torpedo-boats.	
Idzumi, protected cruiser.		
Yamato, unprotected cruiser.		
Tatsuta, gunboat.		
Three destroyers.		

"The ships remained together at Kure from the 20th until the 23rd. On the morning of the 23rd the imperial squadron left for Kobe, arriving the same evening. On the 24th the defending squadron left Kure, and stood to the eastward. This squadron was sighted off Kishinada Shasu, in Osaka Bay, on the 25th, exercising at tactics, and here it anchored on the evening of the 26th. The attacking squadron left Kure on the 25th, passed out of the Inland Sea by the Bungo Channel, rounded the southern end of Shikoku Island, and was next heard of in the Kii Channel on the morning of the 28th.

The second phase.

"His Majesty the Emperor embarked on board the *Asama* at Meiki at 8.15 a.m. on the 28th, and proceeded to the Kii Straits, accompanied by the four escorts already named. Quite a large staff of officers were with him, and these included the Minister of Marine, Minister of War, Minister of the Home Department, Field Marshal Marquis

Oyama, and many others. Admiral Ito, flying his flag on the *Miyako*, also accompanied him.

"The defending squadron joined the imperial squadron in Asaka Bay. At noon the two squadrons in company were seen standing south-west outside the Straits of Idzumi, along the coast of Awaji.

"In the meanwhile the attacking squadron had reached Wakanoura Bay, about ten miles east of the Idzumi Narrows. Here a sham battle took place, which was witnessed by the Emperor. This battle included a daylight torpedo attack, and was more of a spectacular display than a solution of any tactical problem. The defending squadron retired from this attack through the Idzumi Straits and along the north-west coast of Awaji. The Emperor's squadron anchored in Kuroye Bay at 4 p.m., and shortly afterwards the attacking squadron anchored in the same bay.

"That evening at 8.15 a torpedo attack was made by the defending flotilla upon the attacking fleet. Searchlights were used, and much powder was burnt, the attack lasting about one hour. All firing had ceased by 9.30. The next morning His Majesty the Emperor held an audience on board the *Asama*, at which all flag officers and captains were present, and were complimented by the Emperor on the success of the manœuvres. The *Asama* returned to Meiki the same afternoon, where His Majesty disembarked, and the ships of the several fleets proceeded to Kobe to take up their appointed positions for the grand naval review to be held on the following day.

Naval review.

"This review was held at the conclusion of the naval manœuvres, and was witnessed by His Majesty the Emperor.

"The position each ship was to occupy in the Bay of Kobe had previously been buoyed, and all ships were to

lie at single anchor. On Sunday, April 29, at 1.30 p.m., the first torpedo flotilla, consisting of eight destroyers and nine torpedo-boats, escorted by the *Toyohashi*, arrived. They entered the harbour at a speed of about 14 knots, but when near the anchorage stopped and lost all order, each one seeking its anchorage independently. About forty minutes later a second flotilla arrived, and it was fully three o'clock before they were all anchored.

"At 3.15 p.m. the first squadron of heavy ships approached the bay in two columns, led by the *Fuji* and *Yashima*, and at five a second squadron came in. The heavy ships proceeded to find their places in the same manner as the torpedo-boats, and it was seven o'clock before they had all finally anchored. That night the ships tried all their electric illuminations.

"No foreign men-of-war were present, except the French cruiser *D'Entrecasteaux* and the Russian cruiser *Admiral Korniloff*, although there were a number of them at Yokohama.

"The Emperor reviewed the Fleet from the deck of the *Asama*, which was followed by the *Akashi*, carrying all the foreign naval and military *attachés*, and other invited guests.

"According to the official programme, the Emperor, on board the *Asama*, left Maiko at 8 a.m., and about nine entered Kobe Harbour. As the *Asama* entered the harbour every ship fired a salute of 21 guns. The *Asama*, followed by the *Akashi*, steamed through the Fleet, and as the Emperor passed, the crews of all ships 'manned the rail' and cheered him. After the review the Emperor, with Admiral Viscount Ito, left the *Asama*, and went on board the new battleship *Shikishima*, where he received the officers of the Fleet and all invited guests. At this audience all the naval and military *attachés*, except the American and

British, received decorations. The Emperor returned to the *Asama* at 3 p.m., and at 3.30 left for Maiko, all ships again firing a salute of 21 guns. In the evening the Minister of Marine gave a banquet, and the next morning, May 1, the ships began to disperse."

Nothing, surely, could indicate better the efficiency for which the Japanese are striving than this account of the manœuvres of a Fleet of a country just emerged from barbarism. In several respects the Japanese have improved on European methods, and especially in one particular—every officer, high and low, profited by the exercises. In Great Britain only four admirals are with the manœuvring squadrons, and of these, practically, only the two seniors gain the maximum advantage from the tactical problems that are studied. Other officers seldom know the why and wherefore of what is transpiring. Here, at any rate, we may learn a lesson from our former pupils, who have now become our allies in the maintenance of peace in the Far East.

CHAPTER VI

MISSING BRITISH CRUISERS *

AGILITY in the prize-ring, quickness in all forms of sport, ability to manœuvre swiftly in the wind in the old sailing-ship days were always passports to victory. The same holds true of fights afloat in the opening of the twentieth century. Speed in battleship and cruiser will tell. Nelson's cry.

"Frigates, more frigates," was the cry of the victor of the Nile and Trafalgar, and it looks as though the Admirals entrusted with the defence of the Empire in the next naval war would make the same entreaty, "Cruisers, more cruisers." We have not sufficient ships of this type, we do not enable our officers to study sufficiently the best use to make of them, and what vessels we have are, in large part, too slow. It has been claimed repeatedly that the Admiralty underestimate the number of cruisers which will be required to act as eyes and ears of the battle squadrons and also to protect commerce. These are two distinct *rôles*. In last year's manœuvres the authorities gave Admiral Sir Gerard Noel too few scouts, in accordance with their

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traditional policy, and he was hampered consequently throughout the week's mimic war as Nelson was so frequently handicapped in the stern encounters in which he engaged.

Confusion of types.

So rapid have been the strides of the marine engineer and the ordnance and armour manufacturer, that the old standards by which men-of-war were judged require revision. We are now building battleships that are swifter than our cruisers, and some cruisers that are more powerful for offence and defence, or at least as powerful, as many of our battleships. For many years the classification of warships was a comparatively simple matter, but those days have gone, and disorder reigns. It was an easy task to allot to each type of ship its place. We recognized that a man-of-war was necessarily a compromise of the features that a naval enthusiast would desire to see embodied in every ship—power of attack and defence, swiftness, sea-worthiness, and great radius of action. In different degrees, according to the work a particular vessel was intended to do, these desiderata were varied. We had the battleship with heavy guns behind armour and its belt and citadel, the cruiser in which speed and coal-carrying capacity were the primary considerations, and the torpedo vessel in which fleetness was regarded as the first essential.

For many years little occurred to upset these preconceptions. Then various foreign navies began to lay down cruisers swifter than the old type, with the advantage of an armoured belt and a far more formidable

battery of guns, while we have lately had the questionable satisfaction of building ourselves, and seeing our neighbours build, battleships and armoured cruisers with speeds, in many cases, exceeding that of the majority of the practically unarmoured ships which are relied upon to act as the eyes of the British squadrons in the next naval war, and as the protectors of our oversea commerce; and it is all oversea which is really vital. Under the circumstances it will be useful to see where the most recent developments are leading us, and whether the naval authorities in their construction proposals are showing a due appreciation of the new principles that should guide them in deciding on the class of warships that are best suited to the new conditions of naval defence that are being adopted by rival Powers.

Speed in warfare.

The main purpose is to consider the probable influence of speed on the future naval war in view of recent developments. The lesson of all others which the campaign in South Africa has taught the War Office and the country, is the importance of speed, or mobility, to use the word usually associated with land operations. When the fighting began, mounted men, Englishmen and Colonials, were told that they were not required. Within a few months it was evident that great mobility was the first essential if the war were ever to be brought to a satisfactory conclusion, and for a year past the British Government have been taking every suitable man and horse (and some also unsuitable), and conveying them with all despatch,

and practically without any of the once much-boasted training, to the scene of operations. This was the situation before the guerilla tactics were resorted to by the enemy, and in later months the value of mobility has been further emphasized. It has been recognized as of first importance for cavalry, infantry, and artillery. In this respect the war has produced a revolution in the Army, and what is true of warfare on land is even more true of contests afloat.

It may be urged that the conditions in South Africa are altogether peculiar: our generals have had to chase the foe over a huge area equal in extent to more than half Europe. Wherein, however, does this differ from the task that will devolve on the Navy? When war does occur our men-of-war will have to patrol not merely territories half as great as Europe alone, but will be the guardians of almost limitless ocean stretches, often covered by thick mists or fogs, rendering scouting and all operations most trying. It will fall to the cruisers of the fleets to watch the enemy's or enemies' ports, to act as the eyes of the battle squadrons, and to protect the commerce of the Empire. Speed, the highest speed obtainable, will be of vital consequence—speed to carry tidings of the enemy's movements in port to the admiral in waiting with his battleships in some spot safe from attack by torpedo-boats or submarines; speed to hang on to the tail of the foe's cruisers when they are in too great strength to be attacked; speed to overhaul any of the enemy's commerce-destroyers when prowling in search of prey; speed to steam ahead of the

battleships, screening them from the enemy's observation, and signalling back such information as may enable the admiral in command to judge when to avoid an attack or when again he can force a contest with the best hope of success. In short, in naval operations of any kind the speed of the cruisers co-operating with the battle line will largely determine the success of the strategy and tactics of the admirals, and without great speed commerce-protection will be impossible. Therefore, whatever else we sacrifice in our cruisers, we must have fast steaming qualities with reasonable coal-stowage.

A few years ago it was possible to admit the primary importance of speed in our scouts and commerce-protectors without any misgivings as to their ability to do all that might be required of them, though for various reasons they have usually been under-armed in comparison with those of several other Powers. Latterly, however, the point of view has veered, and it is no longer possible to regard the situation with that equanimity which is most congenial to the Anglo-Saxon mind.

Battleships swifter than cruisers.

In the past it has been laid down that in building a belted and heavily armed ship, one of the last—most expert constructors have put it absolutely last—considerations to be borne in mind should be speed. Consequently the world's Powers were content to build vessels for the fighting line of quite inferior rates of steaming. Since France and Russia began the construction of armoured cruisers this principle has been

undergoing a process of variation of the utmost consequence, and as high steaming qualities as are compatible with due defensive and offensive qualities have come to be regarded as desirable for the fullest efficiency.

Consequently, whereas we were satisfied with a legend speed, under natural draught, of from 15½ to 17 knots in almost all battleships completed in the last twenty years of the nineteenth century, the nations, and not least Great Britain, are now bent on an increased rate of propulsion that is as surprising as it is satisfactory as a mere mechanical achievement. Owing to the recent improvements in the manufacture of armour, it has been possible to reduce the thickness of the protective skin without endangering the safety of the vessel under attack, and advances on the part of the ordnance-makers have led to the introduction of more formidable guns while actually reducing their weight. Consequently, whereas the percentage of armour to displacement in the *Royal Sovereign* class of the early nineties was 20·5, and in the *Majestic* type was 18·7, in the *Canopus* class it is only 13·3, and even in the more formidable ships of the new *Admiral* class now building it is as low as 14·3. The economy thus effected has been utilized by our constructors to fit far more powerful engines. From the maximum of the nine *Majestics*—17 or 17½ knots—we have jumped to a normal speed of 18 knots, or slightly more in the *Canopus*, *London*, and *Formidable* types—14 ships in all—of the programmes between 1896 and 1899; 19 knots in the six *Admiral* battleships, *Duncan*, *Cornwallis*,

Exmouth, *Russell*, *Albemarle*, and *Montague*, and 18½ in the huge "Commemoration" class of 16,350 tons' displacement of the 1901 programme, three in number, and the greatest men-of-war ever built. In view of the fact that these ships will be the most effectively armed in the British Fleet, they are veritable triumphs of the skill of the naval constructor and the marine engineer.

Foreign construction.

If we were the only Power who were building ships of such strength and speed, we could afford to blink the conclusions which otherwise must be drawn from their construction. But we are not alone. The builders of other countries have seen the same possibilities, and they, too, are engaged in building battleships with the celerity of cruisers. The following are the ships which are projected, or are being produced, for various rival navies, the speeds which they are designed to reach being indicated in each case:—

Country.	Name.	Speed.
France	Two (1901) (actual sea steaming) ...	18
Germany ...	Two (1899) Kaiser class (three have been completed)	18
	Four (1900–1)	19
	Four (1902–3)	19
Italy	Vittoria Emanuele III. and Regina Elena	22
	Regina Margherita and Benedetto Brin	20
Russia	Borodino, Alexander III., Orel, Tzarevitch I., Retvizan, Pobyeda, Knaz Syuvorof	18
United States ...	Maine, Missouri, Ohio, and Illinois	18
	Virginia, New Jersey, Georgia, Rhode Island, and Nebraska ...	19
Japan	Mikasa	18 to 19
Austria-Hungary	Hapsburg	18½

No claim is made that the above list is complete. It omits the completed Italian battleships of from 19

to 20 knots, the *Sardegna*, *Sicilia*, and *Re Umberto*; the *Hatsuse*, *Asahi*, *Shikishima*, and *Fuji* of Japan, with a speed of from 18 to 19 knots, and Russia's *Peresviet* and *Ossliabya* of 19 knots. But the list is sufficient to show very clearly that the British constructors are well in line with those of the other great navies, and that speed is no longer regarded as a comparatively negligible quantity in battleships. Omitting the ships which are merely credited with 18 knots, some of which will probably do more, there are here enumerated no fewer than twenty-eight battleships of the Powers, including the nine British, now under construction, which are to steam at 18½ to 19 knots or more, in most cases with natural draught. In fact, the Italians claim that the *Regina Margherita* and *Benedetto Brin* will be able to travel at nearly 22 knots under forced draught. These facts mark a revolution in the construction of ships for the fighting line, the wisdom of which the recent manœuvres have amply demonstrated.

Advent of the armoured cruiser.

It is unnecessary to refer at any length to the developments which have led the Powers of the world to begin a race in the provision of cruising ships only less heavily armoured than battleships, and with speeds in excess of anything that has hitherto been obtained from any ships larger than torpedo-craft. All over the world, in the United States as in France, Germany, Russia, and Japan, cruisers with belts of varying thickness and heavy batteries of guns are being built—some have been completed—with speeds of from 20 to 23

and 24 knots. They are the predominant feature of the shipbuilding programmes of the naval Powers. For a time the British Admiralty ignored the well-marked tendency abroad, but at last they were obliged to recognize the futility and danger of hanging back, and in the financial year 1900–1 no fewer than six armoured cruisers of 21 knots were under construction, and there are now twenty-two others in hand or planned which are expected to yield 23 knots under natural draught, veritable swift ocean greyhounds. In three or four years we shall have twenty of these vessels of great rapidity of action ready for sea, and eight more nearing completion. In this fact there is occasion for the liveliest satisfaction, and Sir William White and the Lords of the Admiralty can be most sincerely congratulated on the awakening which has taken place since the *Powerful* and *Terrible* and the eight ships of the *Diadem* or improved *Powerful* class—poor ships in speed and gun-power and protection, and very expensive—were designed.

Compared with the armoured ships now building, our latest protected cruisers are failures as men-of-war. This is admitted by the decision to mount four more 6-inch guns in the *Powerful*. The *Terrible* will be similarly treated. These ships suggest comparisons not without interest, though the figures are far more favourable to the *Powerful* and her sister than a more thorough examination of their features would justify.

COMPARISON OF THE LATEST BRITISH CRUISERS.

	Powerful, 1895, (protected.)	Diadem, 1896, (protected.)	Cressy, 1898, (armoured.)	Drake, 1899, (armoured.)	Kent, 1900, (armoured.)	Devonshire, 1901, (armoured.)
Displacement (tons) ...	14,200	11,000	12,000	14,100	9,800	10,200
Length (feet)	500	435	440	500	440	450
Breadth	71	69	69½	71	66	67
Draught	27	25¼	26¼	26	24½	—
Belleville boilers	48	30	30	28	—	—
Indicated horse-power ...	25,000	18,000	21,000	30,000	22,000	—
Speed (knots)	22	20½	21½	23	23	23
Armament	2 9·2-in. b.-l. 12 6-in. q.-f. 16 12-prs. 12 3-prs.	— 16 6-in. q.-f. 12 12-prs. 3 3-prs.	2 9·2-in. b.-l. 12 6-in. q.-f. 12 12-prs. 3 3-prs.	2 9·2-in. b.-l. 16 6-in. 14 12-prs. 3 3-prs.	— 14 6-in. 10 12-prs. 3 3-prs.	2 7½-in. b.-l. 10 6-in. q.-f. 10 12-prs. 3 3-prs.
Armour-belt (inches) ...	nil.	nil.	6 ins.	6 ins.	4 ins.	—
Gun-position (inches) ...	6 ins.	2 to 4½ ins.	6 ins.	6 ins.	4 and 5 ins.	—
Deck (inches)	3 to 6	2½ to 4 ins.	1½ to 3 ins.	2 to 4 ins.	2 to 4 ins.	—
Coal-supply—						
nominal (tons)	1500	1000	800	1250	800	—
maximum	3000	2000	1600	2500	1600	—

The six classes of cruising ships constructed in the final years of the last century divide themselves into two groups: (*a*) the *Powerful* and the four *Drakes;* and (*b*) the *Diadems* and the *Cressys, Kents,* and *Devonshires,* the last three types comprising twenty-eight ships. The *Powerful* has seldom touched her speed of 22 knots, but even if she is credited with this rate of progression, what is the inevitable conclusion to be drawn? The older vessel, the *Powerful,* older by five years only, has no side armour, carries four fewer 6-inch quick-fires, and is at least a knot inferior in speed, but has more small guns than the *Drake.* No wonder the Admiralty have decided to add four 6-inch quick-firers to the armament of the *Terrible* and *Powerful.* The sole advantage of the *Powerful* over the *Drake* appears to be that the stowage of coal is 3000 tons, more than sufficient to enable her to make a great circle of the world, while the *Drake* is credited with 500 tons less.

In all the new ships the old fatal policy of turning them into colliers should be abandoned. No country has half as many coaling-stations as Great Britain, many of them adequately defended, and consequently it cannot be wise to build on the assumption that our warships will wander round the globe without being able to obtain fresh supplies. Moreover, the machinery of the *Powerful* and *Terrible* would never sustain the strain of a run of 25,000 miles, even if it were desirable that they should make the experiment.

Turning to the smaller cruisers of the *Diadem* class,

as compared with those of the *Cressy* and *Kent* types, no less surprising contrasts are presented. Of prime importance is the fact that while the latter are provided with a belt, the former depend for protection, as in the case of the *Powerful*, on a steel deck which the newer ships combine with their vertical armour. On 1000 tons more displacement the *Cressy* carries two 9·2-inch guns, sacrificing four 6-inch, but strengthened by a number of smaller guns. She has slightly less room for coal than the *Diadem*, but in spite of her heavy armour is able to steam a knot faster, and therefore, apart from all other considerations, is far the better ship for her work. What, then, shall be said of the sixteen cruisers of the *Kent* class? With a displacement 1200 tons less than the *Diadem*, they have a belt of Krupp steel four inches thick, have slightly less coal-stowage capacity, and two less 6-inch guns, and fewer 12-pounders, but are being built lighter for a speed of no less than 23 knots. These ships are marvels in naval construction, and unfortunately carry a condemnation of the older ships, since they have in a higher degree the first essential of a cruising-ship, speed.

These comparisons of the latest types of cruisers have been somewhat of a digression. The main point is that all the constructors of the world are now intent on providing armoured ships, battleships and cruisers, which combine with excellent defensive and offensive qualities speeds excelling anything that was considered possible in earlier cruisers which have no armour-belts,

and depend for their protection entirely on steel decks of varying thicknesses.

Importance of speed.

Admiral Bonamico deduced from the China-Japanese and the Spanish-American wars two main lessons, (*a*) the battles of Cavite and Yalu indisputably demonstrated the great tactical efficacy of speed, and (*b*) speed is the arbiter of the tactical as of the strategical situation. Another authority, Captain Mahan, has laid it down as a naval axiom, and it is generally admitted, that "rapidity of action is a cruiser's primary object." In his prize essay of the Royal United Service Institution, Commander Harry Jones supplemented this dictum—

> "Our true policy as regards the speed of cruisers," he wrote, "I believe to be as follows: They should *all* have sufficient speed to carry out their scouting without fear of interference from battleships. For this purpose they should be two or three knots faster than the contemporary battleships, and *any* sacrifice must be made to obtain that superiority."

On the face of it this contention requires no argument if the duties of this class of ship are rightly appreciated. Unfortunately, it condemns as practically useless a large number of our cruisers, on our numerical superiority in which we have been in the habit of pluming ourselves. Since more than half the ocean-borne commerce of the world is British, it follows that in case of hostilities we should require numerous cruisers, and it cannot be denied that to efficiently perform their duties as trade guardians they must be able to steam faster than the

ships that the enemy would send out to harry our merchant ships. It is also incontrovertible that the cruisers acting as scouts to a battle squadron—the latter with a speed of 18 to 19 knots, such as we shall possess in a year or two—should be able to steam at from 22 to 23 knots, and we shall want ships of similar engine-power to hang on to the heels of the enemy's fast-travelling battleships and chase great merchant cruisers such as the *Deutschland*, the *Kaiser Wilhelm der Grosse*, and *Kronprinz Wilhelm*. It is a matter for serious regret that the British Admiralty are not making adequate provision for the performance of these duties in time of war. If the world would only stand still while we continued to build a large number of ships of the *Kent* (or *County*) type, the problem would be solved and the danger averted, though at an immense cost.

List of British cruisers.

It is frequently said that, however great may be the difference of opinion as to the strength of this country in armoured ships, at least it has a large array of cruisers, ships whose object should be, it must be remembered, rapidity of action. Appended is a list of all the cruisers of the present British Fleet arranged in classes, with their speeds, the figures being in some cases those of the late Admiral Colomb, while others are calculated from actual trial performances which are invariably in advance of the rate attained in service.

CRUISERS.

First Class.

No. of Ships.		Speed. Natural.	Forced.
2	Powerful and Terrible (protected)	22·0	—
4	Diadem (protected)	20·5	—
4	Argonaut „	20·75	—
4	Crescent „	18·5	19·7
5	Edgar „	18·7	20·0
2	Blenheim „	20·0	21·5
7	Australia (old) (armoured)	16·0	18·5
2	Warspite „ „	15·5	16·7
4	Cressy (armoured)	21·5	—
34			

Second Class.

3	Hyacinth (protected)	20·0	—
4	Vindictive „	20·0	—
6	Venus „	19·0	20·0
3	Talbot „	19·0	20·0
8	Astræa „	19·0	19·5
10	Æolus „	18·5	19·5
10	Apollo „	18·5	19·5
4	Forth „	15·5	17·0
4	Amphion „	16·5	—
2	Iris and Mercury (unprotected)	15·0	—
54			

Third Class.

11	Pelorus (protected)	19·5	20·5
4	Pallas „	16·5	19·0
5	Wallaroo „	16·0	19·0
2	Barham „	18·5	19·5
4	Barracanta „	15·0	16·5
3	Magicienne „	16·0	18·0
2	Medea „	17·5	19·0
1	Pylades „	11·5	13·0
7	Archer (unprotected)...	16·5	17·0
2	Fearless „	14·7	17·0
41			

The above lists of names are compiled from the latest official statements (Fleets, Great Britain and Foreign Countries, 1901). Consequently over half a dozen old battleships included among the first-class cruisers in the former parliamentary return, with a speed of about ten knots, have not been admitted; and,

owing to the pressure of public opinion, the authorities have had to ignore a group of old and slow second and third-class cruisers for which they have always taken credit, though their speed is absurdly slow. The above may be accepted as an *honest* list of the cruisers of the British Fleet, though the *Australias* and *Warspites*, the *Iris*, *Mercury*, *Medea*, *Medusa*, and *Pylades* are obsolescent and practically useless as cruisers, and the five *Magiciennes* are really only good for 15 knots. These ships have been given the benefit not of the speeds that they do on actual service, but of those that they did at their trials, purely fancy rates as a rule.

Anti-quated cruisers.

The results of the comparisons are not reassuring, remembering that we are building battleships to steam 19 knots, "with natural draught in the stokeholds," to quote the late First Lord, and that our rivals are doing the same, and also that Commander Jones, echoing naval opinion, holds that our cruisers should have an advantage of two or three knots over battleships. In the *Blenheim*, *Blake*, *Powerful*, and *Terrible*, we have four ships which are nominally capable of travelling about 22 knots an hour. Every one is aware what the last two vessels have shown themselves equal to. In the eight ships of the *Diadem* and *Argonaut* classes we have cruisers whose best rates of from 20 to 21 knots are unreliable, and have not been sustained on service, except in the case of the *Diadem*, which ran from Gibraltar to the Thames at 19·27 knots, at 86·4 of her maximum power. The nine *Edgars* and *Crescents*

are excellent craft in some respects, good for about 18 or 19 knots under pressure. On actual service 19 knots is the highest speed that could be obtained from these twenty-one first-class cruisers, which is exactly the speed which is anticipated from the newer battleships, and three or four knots below that of the new armoured cruisers of the world's navies. We have also four *Cressys* completed, making a total of twenty-five first-class ships. From the details that are set out of the second-class vessels, and their speeds under the most favourable circumstances as to sea and fuel supply, it will be seen that the record of the best forty-four under service conditions would not, as a rule, exceed 17 or 18 knots, though sixteen have a nominal rate of 20. No satisfaction, on the other hand, can be drawn from the forty-one third-class craft, which are even more lacking in the quality of swiftness than the larger ones. Twenty-four had a nominal forced trial speed of 19 knots or slightly over when new, and, for the most part, with forced draught, but it is extremely doubtful if on service they could steam faster than 17 or 18; in other words, considerably less than the newer battleships, and in a rough sea their speed would be greatly diminished owing to their small size. From these too flattering assessments of our cruiser speed it will be seen that we have—

	No.	Average speed.
	25 First class	18 to 19 knots.
	44 Second class	17 „ 18 „
	24 „ „	17 „ 18 „
Total ...	93	

If, as is claimed by Captain Mahan, and has been repeatedly urged by every competent naval student, rapidity of action is the primary object of a cruiser, it is apparent that the slower ships are useless for their work. The trial speeds of thirty-one of the vessels of the second class (18·5 to 19) are about the same as the highest records either attained or credited to the twenty latest battleships of the British Fleet, and all the later battleships of our rivals. It will be noticed that many of the cruisers are officially credited with from one to two knots more under forced draught, but under the same, or very similar, conditions such older battleships as the *Barfleur* and *Centurion* are good for 18½, the *Majestics* from 18 to 18·7, while other existing belted vessels are built for 17 to 18 knots.

Our battleship speed has been immensely improved, while in our cruising ships no corresponding advance has been made. In the opinion of Admiral Sir John Hopkins, we have made no progress in the speed of second-class cruisers since 1889, and he believes that the slow craft will hamper a Commander-in-Chief in any operation. Moreover, the admirals who reported after the naval manœuvres of 1888, laid it down that there should always be at least one cruiser for every battleship when blockading an enemy's ports, apart from those required for commerce protection, which should be in the proportion of two to one. On this assumption the British Fleet should be able to command the services of thirty-one cruisers capable of steaming from 21 to 23 knots an hour for use with our best battleships, excluding

the older, slower battleships, and the ships building. The statistical figures given above indicate sufficiently clearly how far this need is met, and show that the Admiralty, after making the best provision possible for scouts and watchers for the battle fleets, would have none but the slowest ships for the patrol of the trade routes, which should rank among the most important duties of the sea forces of a great mercantile nation.

Two admirals' opinions.

It may reasonably be asked if we are worse off than our neighbours in this respect? Any detailed reference to the wonderful ships built by Sir G. Armstrong, Whitworth and Co. would be unnecessary. Their features have been widely discussed. In the past ten years, when in second-class cruiser construction we have been so sadly falling behind, this firm has been building for various Powers a series of excellent ships. In vessels of from 3000 to 5000 tons, speeds of 21½ knots and more have been obtained, with from a knot to a knot and a half extra under forced draught. In larger ships speeds of from 21 to 24 knots have been secured with "open stokeholds," in spite of the weight of armour and heavy batteries that they carry. Sir Edward Reed, a former Constructor of the Navy, who has been responsible for the orders for many of these ships, has stated that "no undue sacrifices of strength or durability" have been made in them, and we have further the assurance of Mr. Philip Watts, their designer, and now the Director of Naval Construction for the British Navy, that the "speeds have been determined by four consecutive runs, two with and two against

the tide, over the (Admiralty) measured mile, under the rules that hold for the British Navy." Admiral Hon. Sir E. R. Fremantle, who was in command of the British squadron in Chinese waters during the war between China and Japan, was able to follow the careers of several of the Elswick-built ships of the Japanese Navy. "I can say positively," he remarked in discussion, "from my own observation, that those Elswick vessels were the ones (of the Japanese fleet) that did the most cruising," and he formed "a very high opinion" of the ships in respect to their steaming qualities, ammunition supply, and general stability and durability. Admiral Sir John Hopkins has strongly supported Sir Edmund Fremantle's views.

"Any Commander-in-Chief," he stated, "would gladly accept the *Buenos Ayres* type (Elswick built) for his second-class cruisers, looking at her enormous speed (23 knots), natural draught, and coal-stowage and armament, rather than the same number of *Astræas* (British cruisers of only slightly less displacement), hampered by compromises which reduce the speed to 19½ knots."

Such opinions cannot be easily swept away, supported as they are by the general truth that in a cruising ship speed is of primary importance. Not only do these Elswick ships do well on their trials, but they maintain their excellent qualities even under the control, often most inefficient, of foreign engineers and stokers. The *Engineer* has printed an interesting statement as to the Japanese cruiser *Idsumo*, one of the famous armoured cruisers of the Elswick type. She

steamed last year from Singapore to Yokosuka, 4000 odd miles without re-coaling. Commenting on this achievement, this journal states: "As some of our ships, nominally able to go round the world a time or two without re-coaling, have to stop at every port on the way out to China, this cruise of the *Idzumo's* may be taken as something of a record, especially as her Belleville boilers are greedy for coal."

Foreign "greyhounds."

But dismissing these British-built ships, what have foreign Powers been doing in the past ten years or so in the matter of cruiser construction? They have been far from inactive in a branch of naval construction which we practically abandoned for many years, that of protected, well-armed, cheap and swift cruisers to serve as finders and watchers of an enemy, and protectors of our mercantile marine. France alone has built, or is building, over thirty of this type of over 19 knots, apart from sixteen armoured cruising ships of from 20 to 23 knots, giving a total of thirty-six ships of over 19 knots. Russia in the same period has added three armoured ships of over 20 knots to her fleet, besides fourteen protected vessels of 20 knots or more. These two allies possess, or are now building, therefore, over fifty ships to steam at 19 or 20 knots. Germany and America have also been building swift craft. The result is that while we have been standing still (until the orders were given for the new British armoured cruisers), our rivals have been gradually reducing our boasted margin of superiority in numbers, while designing craft of much superior speed.

Perhaps the most noticeable of the foreign cruisers is the Russian *Novik*—one of many sisters—which, on a displacement of 3000 tons and with an armoured deck and an armament of two 6-inch quick-firers, twelve 12-pounders and six 6-pounders, travels at the unrivalled pace of 25 knots. These results are obtained on a displacement of 1000 tons more than the eleven ships similar to the *Pelorus* with their legend steaming of 20 knots under forced draught. As an evidence of the continued conservatism exhibited in this country, it is worthy of note that the two second-class cruisers, *Challenger* and *Encounter*, laid down in 1901 at Devonport and Chatham, in spite of their considerable size and the absence of any armoured belt, are to have a speed of only 21 knots, and very light guns. The American-built Russian cruiser, *Varyag* (6500 tons), recently beat all records by steaming at a spurt 24½ knots an hour. The French *Chateaurénault* attained over 24 knots in September. We have done nothing to equal these performances.

Admiral Hornby's demand.

It may be said that the fact that there are twenty-four armoured cruisers now under construction or projected, in addition to four just completed, shows that the Admiralty are alive to the needs of the fleet, but the unfortunate fact is that France and Russia are adding, or have already added, as many cruisers of this type to their navies. It is impossible to blink the fact that the authorities have devoted too little attention to this side of naval construction, and have thus sacrificed to a great extent the advantage which was obtained

under the Naval Defence Act. The cruiser of the twentieth century is the frigate of the first half of the nineteenth. In the year of Trafalgar we had 244 frigates, and Nelson never admitted that there were enough, while about the time of Waterloo we possessed over 300. Thirteen years ago, when our battle squadrons were weaker, our commerce smaller, and our Empire less extensive than to-day, the late Admiral Sir Geoffrey Hornby, after exhaustive examination of our requirements, laid it down that we required 186 cruisers for our commerce protection alone. Since this calculation was made by this officer of the highest standing, to whom in some measure we owe the strength of our fleet to-day, the duties that will devolve on the Navy have immensely increased, and yet there has been no effective effort to meet the necessities of the situation as they will be disclosed on the outbreak of hostilities. "More frigates" was the cry that was wrung from Nelson. "Only numbers can annihilate," he exclaimed on another occasion, and there is too much reason to fear that the admirals who are given command in the next war will echo the words. Thirteen years ago Admiral Hornby declared that we needed 186 cruisers for commerce protection alone; to-day, including the armoured ships of 21 and 23 knots now building, we possess only 151, and of these over 36 have even nominal speeds of about 17 knots or less, some very much less, so that for the effective work that this type will have to do, it may be said that we possess (or rather shall possess when the cruisers now building are ready)

only 115 that are in any degree efficient for their work on the records of their trial performances, a too flattering judgment of their capabilities, as naval officers well know.

Even if it is held by those responsible that speed in cruisers is of second or third importance, we shall not know the principle upon which they have been built in the last ten years, for our completed cruisers have neither speed nor guns in the same proportion as those of our neighbours. They carry large quantities of coal, but it is quite certain that the circumstances would be very rare in which a cruising ship would find it advantageous to steam on and on day after day without making a call at any coaling-station, even if her engines would stand the strain, which is most unlikely.

Speed *versus* coal.

We must come to the conclusion, which has forced itself on many experienced officers, that the old conservative policy of turning every ship of the fleet into a collier must be abandoned. A cruiser should have a fair provision of fuel, such as foreign cruisers for the most part possess—for in the absence of coaling stations their need is greater than ours—and reliance should be placed on our defended coaling bases, otherwise what can be said in support of the millions sterling which have been spent to render them able to repulse attack? Moreover, it will be far better policy to admit that a fleet on a war footing will need a number of auxiliaries, among them fast colliers, as Admirals Fremantle and Hopkins and others have advocated, and the Admiralty at length show a disposition to admit. They will be

absolutely essential. If we equip our Fleet with defended ports for coaling and also provide mobile colliers, why should we sacrifice the primary consideration in our cruisers in order to enable them, as in the case of the *Powerful* and *Terrible*, to travel round the world (theoretically) without re-filling their bunkers? It is exactly as though a man impoverished himself to provide a comfortable home for his family, supplied it with every luxury in the way of clothes, fuel and provisions, and then forced them to cripple themselves by carrying about all they may require of food and raiment for many days, thus preventing their entering into fair competition with their contemporaries. Let every ship of the Navy have a fair and reasonable supply of coal, and abandon some of the unnecessary weights that hamper them, and we shall obtain cruisers less like under-armed and unarmoured battleships, and better suited to their work.

For the full efficiency of the Fleet the Admiralty ought at once to forget that they possess some of the ineffectively armed, slow ships, and lay down a number of cruisers of moderate dimensions, of good speed, adequate protection, and powerful gun-fire. Such ships are being built in other countries. If speed is of the importance that a casual observer would conclude from the latest designs of battleships of our own and foreign constructors, and from the splendid little ocean greyhounds that the latter are building at a minimum of expense, this country cannot afford to place reliance on the many earlier inefficient and slow cruising craft for service as scouts, watchers, and commerce defenders.

Literally, we rely for our daily bread on the inefficiency of the Navy for its work. This must be ungrudgingly recognized at whatever cost. "Accurate intelligence," remarks Captain Mahan, "is one of the first desiderata of war. . . . Historically, no navy has ever had cruisers enough; partly because the look-out and despatch duties themselves are so extensive and onerous; partly because vessels of the class are wanted for other purposes," including, in the case of Great Britain, the protection of commerce.

A serious deficiency.

Presuming that (*a*) we are able to utilize 20 armed merchant-cruisers,* (*b*) press into service a similar number of the best of our gunboats and light ships, and (*c*) do the best we can with the 36 old cruisers of slow speed, we might be said to have 191 cruising ships for war duties when the programme now in hand is completed; meantime the number is 169 only. This is a most liberal calculation.

On the other hand, if hostilities occurred this year, what would be our needs? The three admirals in 1889 stated that the proportion should be a cruiser to a battleship when blockading; Lord Charles Beresford

* Arrangements have been made by the Admiralty with the chief British steamship companies whereby, in return for a subsidy, certain vessels are held at the disposition of the naval authorities in case of emergency, and these vessels are so prepared as to be ready to receive their guns at a few hours' notice, and fit out for sea as armed cruisers. The guns, mountings, and ammunition are stored at their ports of call, and a large percentage of their officers and crews are, in accordance with the companies' contracts, members of the Royal Naval Reserve. The White Star, the Cunard, the P. and O., the Orient, the Royal Mail, the Pacific, and the Canadian Pacific hold their best ocean liners at the disposition of the authorities in case of war.

would have the proportion three to one. We have 39 modern battleships completed, besides 10 vessels of older date, and on Admiral Hornby's estimate we want 186 cruisers for the protection of our commerce, or a total of 235. The deficiency revealed is 66 cruising ships. If we assume that these admirals, the most distinguished then serving their Sovereign, grossly exaggerated our requirements, no allowances can entirely efface the conclusion to which their estimates lead us, estimates, moreover, which have been confirmed by the annual manœuvres each year, and are in agreement with all the lessons deduced from naval history. Yet in the new programme, 1902–3, provision is made for only two armoured cruisers and two "protected" cruisers of the third class.

CHAPTER VII

REFORMING THE "DESTROYER"

Flimsy craft.

LET it be placed to the credit of the Lords of the Admiralty that the words with which they meet inquisitive members of Parliament frequently belie their intentions and suggest a conservatism, if not an obstinacy, which is fortunately exaggerated. When the *Cobra* was lost in the autumn of 1901, the authorities were full of excuses, and claimed that fears as to the seaworthiness of the other torpedo-boat destroyers were unfounded. Since then a representative committee have been deliberating on the construction of all such craft in the Fleet, and a staff of constructors have reviewed every detail of the hull and other designs in order to strengthen the vessels where necessary. Official assurances too often mean very little, and in this matter they merely preluded a revolution to which the Admiralty, for some unexplained reason, were unwilling to confess. As thirty-knot vessels the British destroyers have been tried and found wanting, and for the present, at least, no more of these audacious experiments will be made. What is the use of sacrificing the factor of safety in construction, and then by reducing the load, and by the efforts of a special crew using

special coal, attaining a speed on trial which will never be attained in ordinary service? Such results are not only misleading and fruitless, but they are mischievous, because they are liable to weaken the frail craft. It is a literal truth that half the life of a British "destroyer," on the average, is spent under repair. In other words, the present boats are too weak for the rough-and-tumble of ordinary seawork, and are unreliable, for they cannot be relied upon in an emergency. Owing to the sudden development of defects, they might fall into an enemy's hands with serious results to the British nation, since admirals have shown an inclination to use them as despatch-boats. A man-of-war which is not reliable is a delusion and a danger, and if on this account alone, it is subject for congratulation that the naval authorities have decided to be content with a more moderate speed in future boats. They intend to build a type which shall have greater structural strength; in consequence of their increased size, these "destroyers" will be better able to maintain their rate of progress in a moderate sea than the boats now in the Fleet. In the past, all weights have been reduced to a minimum, to the point of actual danger to the lives of the crew, in order to obtain a speed which, once obtained, has merely served as a paper record, while the inherent weakness which has resulted from the sacrifices made in the scantlings has remained a continual source of weakness and anxiety. This admission does not imply that the existing flotillas are so much scrap-iron, as has been suggested, but that

many of the boats will have to be—and are being—increased in strength, and that they will thus lose their phenomenal speed and become safe and useful boats with rates under service conditions of from 26 to 27 knots.

The turbine system.

The thirty-knot "destroyer," which has so sensationally whisked across the naval horizon, is dead, and can only come to life again when some further progress is made in mechanical science, or the turbine principle can be adapted with safety to such small craft. This new system of propulsion is, in fact, the hope of the future. The turbines had nothing to do with the loss of the *Cobra*, and the Parsons Company are so assured on this point that they have already begun the construction of a new "destroyer," which will have a stronger hull than this ill-fated vessel; but even with this additional weight it should be able to reach a speed of about 30 knots on her trials, and possibly 28 with a full load under service conditions. This, however, is mere speculation, which may or may not be realized. At present it is as well to admit that with ordinary engines, even with the aid of water-tube boilers, a sea-speed of 30 knots is impossible with due regard to the safety of the crews and the reliability of the craft.

The system under which many of the existing ships have been built has been unsatisfactory. The torpedo-boat was not an Admiralty inspiration, but the idea of a private shipbuilder. Mr. Thornycroft, of the well-known Chiswick firm, constructed the first torpedo-boat

for the Norwegian Government nearly thirty years ago, and thus led a fashion which soon became world-wide. The subsequent history of these boats is of interest, and has an important bearing on the latest developments which have resulted primarily from the loss of the *Cobra*. In the early eighties, the firms of Thornycroft and Yarrow, and a few others, were building torpedo-boats for the navies of the world. The race was waged with energy to turn out as many of these new engines of war as possible. According to Lieutenant G. E. Armstrong,* the number of torpedo-boats building, built, or projected in 1890 was—France, 210; England, 206; Germany, 180; Italy, 152; Russia, 143; Austria, 61; Greece, 51; Holland, 50; Denmark, 34; China, 32; Norway and Sweden, 31; Turkey, 30; Japan, 24; Spain, 15; Brazil, 15; and Argentine, 14. These remarkable figures indicate the general impression that the torpedo-boat had come to revolutionize naval warfare, and was a permanent and unchanging addition to the weapons of war. But even as early as 1885 opinion was beginning to undergo a modification.

Torpedo catchers and destroyers.

Almost simultaneously the French and English authorities came to the conclusion that for sea work a larger type of craft was desirable, and we laid down the *Rattlesnake*, which was known as a "torpedo-catcher." She was the parent of a large class which are still afloat, but go now by the name of torpedo gunboats, for the sufficient reason that it was soon discovered that, far from having the necessary speed to overtake an

* "Torpedoes and Torpedo-vessels."

ordinary small torpedo-boat, they could not in any contest in a moderate sea keep up with her. Between the years 1885 and 1893 no fewer than thirty-three of these craft were added to the British Fleet. When the order for the last of these misnamed "torpedo-catchers" was given, another type was already coming into favour. For the task for which they had been built, the "catchers" had proved failures, and the authorities, recognizing the menace of the large flotillas of swift torpedo-boats along the French coast, set to work to evolve a real torpedo "catcher." What was desired was a small low-lying vessel of small displacement and a rate of progress exceeding that of any ship then afloat. In 1893 we began to build the first group of torpedo-boat destroyers of fame. The *Havock*, the forerunner of this class, was launched late in the following autumn, and created something of a sensation. On a far smaller displacement than the so-called "catchers" —being about half the size—she attained a speed that gave the assurance that in a chase she could easily overtake any of the craft then in the French or any other Navy. Forthwith the Admiralty set to work with energy to create a fleet of these new swift ships, and forty-two were ordered in 1894. At first they were satisfied with a speed of 27 knots, but soon the demand rose until the maximum became 30 knots, and at last even this speed on trials was exceeded by packing into the little hulls boilers and engines of similar horse-power to fair-sized cruisers of contemporary date. As the demand for these boats increased, other builders

were permitted to tender, builders who had not had the experience of the Thames firms in the construction of small craft, which is quite an industry by itself. According to the custom which had grown up at Whitehall, the authorities merely set out the main results that had to be obtained, and left the actual constructors to get the speed as best they might. The trial speed was the point on which attention was principally fixed, though regard was paid to stability in the light of the knowledge then possessed by the Admiralty inspectors.

Weak and unreliable boats.

Thus we came by our flotillas of torpedo-boat destroyers, numbering altogether over a hundred ships of different builds. As a rule, those constructed by the firms with the greatest experience with these craft have given the best speeds and have been the least liable to develop defects, though the history of most of these small men-of-war in the latter respect is not a subject for boasting. Generally, all the "destroyers" have given a great deal of trouble, and have shown such repeated signs of structural weakness that well-founded fears as to the seaworthiness of some of their number have been occasioned. It was such a suggestion that caused the Earl of Selborne to refer to the British "destroyers" in a speech at the Mansion House Banquet last November. He stated—

"I may say that our destroyers—more than a hundred in number—are never at rest. They are always at work in all weathers, in the Channel, in the Atlantic, and in the Mediterranean. Notwithstanding these constant and

continual trials, I am in a position to say that these vessels are a triumphant success. In all these accidents, on only two occasions, certainly, has the stress of very heavy weather disclosed any structural weakness. As to that (namely these two vessels only) an inquiry is being made, and lest the Admiralty should be mistaken we have called in a committee composed of persons who have no connection with the Admiralty to advise us whether the measures we contemplate shall be undertaken."

Experiences at the naval ports.

Lord Selborne, fresh to naval matters, was of course not responsible for a statement so entirely misleading. The torpedo-boat destroyers have been far from a triumphant success, if judged only on one ground, their reliability to do the work that would be assigned to them in time of war. Lord Selborne has stated that they are never at rest. There are some boats that are seldom in any other condition, whether from structural weakness or other cause. Many others spend more than half their time in the hands of the dockyard workmen, as any visitor to the Government establishments can see for himself. Certain flotillas are in commission at the three principal naval ports, but seldom can either of the little squadrons put to sea with all the units, and after every cruise most of the boats have defects of varying seriousness that require attention, and when the day is fixed for them to again put to sea it is the rule rather than the exception for the commander to leave one or more of his little fleet behind. A few facts can be stated to indicate that whatever the qualities these boats may possess, it is

certain that they are frequently not ready for use when wanted. Early in December, 1901, the Admiralty selected four boats to be prepared to leave for the Mediterranean. The *Panther*, *Locust*, and *Thrasher*, which had had their hulls strengthened, were prepared to start when it was discovered that the *Seal* had developed such serious defects that it was hopeless to think of sending her abroad. Consequently, Devonport having no other boat to take her place, though there were several under repair, Portsmouth was laid under contribution and ordered to get the *Flying Fish* ready. The order went forth, and Portsmouth officials responded that, although they could not suggest any other vessel that could be prepared sooner, they would require at least five weeks to do the necessary repairs to the *Flying Fish*. After some delay the three destroyers were sent to sea without their consort. Early in February the *Flying Fish*, after being rendered less frail, underwent a trial at Portsmouth, and was then to have left for Devonport. But again she was delayed for other repairs. Two days later she did put to sea, but had to turn back in consequence of defects which developed as soon as she was under way.

Take another instance of these boats, which are "never at rest." The *Naval and Military Record* records that on the 13th of January, 1902, the Devonport flotilla was to have left for a cruise. Only one "destroyer" was ready to leave, and she sauntered forth alone; one by one the others followed, but it was not until a fortnight later that the flotilla was complete,

and then the *Opossum* broke down, and had to return to harbour. These, it will be noted, were not newly commissioned ships, but were supposed to be prepared for sea in every respect when the order was issued. About the same time the Portsmouth flotilla received similar instructions to put to sea for an instructional cruise. It was then decided that the *Star* and *Flirt* should remain in port in order that they might be strengthened, and not because they were "a triumphant success." One of the other six boats, the *Recruit*, was also detained because she bent and cracked her propeller; she had been resting, it may be mentioned, for over three months. After a further siesta in dock she was able eventually to join the flotilla. The experiences at Chatham are much the same, the boats are seldom ready when required. In confirmation a quotation may be made from a naval correspondent of the *Naval and Military Record*, who, writing on an occasion when another destroyer narrowly escaped the *Cobra's* fate, stated:—

"The attempt at running the instructional 'destroyers' away from port for three weeks at a time, and returning to lie up for one week, has not been very successful. Never during any of the three cruises have the eight boats cruised in company, and at the conclusion of each trip one or more boats have had to pay off. At the present rate of consumption the reserve supply of boats will not be sufficient to keep the flotilla as a squadron in being at this port (Devonport). The same difficulty is being experienced at the other ports in keeping the flotillas' numbers up to the establishment of eight. Another

illustration of the flimsy nature of the construction of these vessels is shown in the *Osprey*. She was caught by the tide in Portsmouth harbour and driven against a buoy, which struck her about the engine-room bulkhead, and has crumpled the bulkhead and plating like paper. It is fortunate that nothing more serious resulted than a hole in the vessel's side; but as it is the *Osprey* will have to pay off, as it will take at least two months to effect the repairs."

Official statistics.

The "destroyers" have been a source of perpetual trouble. But it is not necessary even to judge of the success of the destroyers on this evidence, since the return from the Admiralty obtained by Sir Edward Reed indicates the struggle that many of them had to attain their contract speeds; eight of them failed in the effort. The following are extracts from this document, setting out the facts in all their baldness, and indicating the time in typical cases in which vessels took a long time to build, and the period occupied by the trials:—

Time building.		Name.	Particulars of trials.
Years.	Months.		
5	4	Conflict	Trials began on August 16, 1895, and lasted till June 9, 1898. Delay principally due to alterations to obtain speed.
4	8	Teazer	Trials began on January 8, 1896, and lasted till March 22, 1898. Delay due principally to alterations to obtain speed and breaking of shaft-bracket.
5	2	Wizard	Trials began May 19, 1897, and lasted till May 5, 1898. Delay due principally to alterations to obtain speed.
6	6	Fervent	Trials began August 28, 1895, and continued till February, 1896. Locomotive boilers then removed and water-tube boilers fitted. Trials then lasted from June 12 till August 4, 1899. Finally accepted at 28½ knots.

Time building.		Name.	Particulars of trials.
Years.	Months.		
7	2	Zephyr	Trials began March 13, 1896. Locomotive boilers then removed and water-tube boilers fitted. Trials then lasted from July 5 till September 8, 1900.
5	9	Zebra	Trials lasted from December 16, 1895, to March 5, 1897. Delay in delivery due to renewal of boiler-tube.
2	1	Quail	Trials lasted from March 25, 1896, till January 4, 1897. Principally due to alterations in propellers to obtain speed.
3	11	Otter	The trials lasted from April 7, 1897, till July 18, 1899. This was due principally to (1) alterations in propellers to obtain speed; (2) fracture in both port and starboard crank-shafts.
1	10	Desperate	Trials lasted from March 4 till September 24, 1896. The large number of preliminary trials was due to trying various propellers and to breakdown of starboard m.p. engine.
5	—	Brazen	Trials lasted from September 17, 1896, till March 29, 1900. This was principally due to (1) alterations in propellers; (2) inability to obtain speed. Vessel was finally accepted at 29¼ knots.
—	—	Electric and Recruit	Ordered in 1896, completed May, 1900. Delay in completing trials principally due to difficulties experienced in obtaining speed. Vessels were finally accepted at 29¼ and 29¼ knots respectively.
4	1	Avon	Trials lasted from January 23, 1897, to October 19, 1898. Due principally to (1) alterations in propellers to obtain speed; (2) fracture of shaft-bracket; (3) bending of crank-shaft.
2	1	Violet	Trials lasted from May 13, 1897, till March 10, 1898. Due principally to (1) unsatisfactory working of automatic feed-gear; (2) inability to obtain speed.
5	—	Bullfinch	Trials lasted from December 19, 1898, to November 29, 1900. Due principally to (1) alterations to obtain speed; (2) breakdown of starboard h.p. engine. Vessel was finally accepted at 29 knots.
5	—	Dove	Trials lasted from May 5 to September 20, 1900. Due principally to alterations made consequent on breakdown of *Bullfinch*. Vessel was finally accepted at 29¼ knots.
2	3	Gipsy	Trials lasted from April 14, 1897, till February 4, 1898. Due principally to (1) alterations to propellers to obtain speed; (2) breaking of cylinders and valve-gear.

Time building.		Name.	Particulars of trials.
Years.	Months.		
5	—	Express	This vessel started preliminary trials on October 20, 1898, and has since made 27 preliminary and 10 official trials, but satisfactory official trials have not yet been made. Due principally to inability to obtain speed. Vessel tendered for 33 knots.
3	9	Cheerful	Trials lasted from March 30, 1898, to September 28, 1899. Principally due to fitting new crank-shaft to replace bent one.
4	5	Vulture	Trials lasted from April 12, 1898, till March 10, 1899. Due principally to alterations to propellers to obtain speed.
4	2	Albatross	Trials lasted from October 13, 1898, till April 5, 1900. Chiefly due to alterations to propellers, etc., in order to obtain speed. Vessel tendered for 32 knots. Finally accepted at 31½ knots.
3	6	Lee	Trials lasted from February 16, 1899, till November 30, 1900. Due principally to breakdown of port m.p. engine.
1	—	Thorn	Trials lasted from April 7 till September 7, 1900. Due to (1) alterations of propellers to obtain speed; (2) breaking of eccentric rod and studs.

If in face of these facts torpedo-boat destroyers can be regarded as a "triumphant success," then it will be well if in future the Admiralty rest satisfied with something less than a triumph. The builders sought to do what to many of them, owing to inexperience, was impossible. Excessive speeds attained by a new warship on trial under great pressure must seriously strain all the machinery and boilers, and it may be that this is in some degree responsible for the subsequent unfortunate history of some of the vessels. It is subject for congratulation, therefore, that the contest in fancy speeds, unrealizable in warfare, is to cease, and that we are to sacrifice something of the lightness of the boats now in the Fleet to render them more seaworthy.

With this end in view the *Panther*, *Locust*, *Thrasher*, *Flying Fish*, *Fawn*, *Seal*, *Star*, *Flirt*, and others have been taken in hand. The majority of their consorts will require similar attention. The Committee at the Admiralty have done good work, and have done it thoroughly, with a single eye to the public service, and with little regard to the *amour propre* of the Admiralty.

Comparisons of torpedo-craft.

The Admiralty have given orders for the new ships of this class included in the programme laid before Parliament in March, 1901. They will be stronger and slower. They have also decided to try an entirely new type to be known as "Scouts." These vessels are to be about twice the displacement of the earliest "destroyer," the *Havock*, and will approach in dimensions the parent of these frail little craft, the "catcher." The variations in size and speed of these torpedo-craft—the original torpedo-boats, the "catchers," the "destroyers," and finally the "scouts," as the new type are styled—are of some interest, and may be briefly indicated:—

Date.	Name.	Displacement.	Length.	Beam.	Draught.	Speed.	Indicated horse-power.
		Tons.	Feet.	Ft. Ins.	Ft. Ins.	Knots.	
1877	Lightning	27	88½	10 10	5 0	18·0	460
1885–6	Nos. 21, etc.	63	113	12 5	5 7	20·0	730
1889	Nos. 82, etc.	85	130	13 5	5 5	23·0	1100
1894	Nos. 91, etc.	130	140	15 5	7 5	23·4	2400
1888	Rattlesnake	550	200	23 0	9 0	18·5	2700
1888	Sharpshooter	735	230	27 0	8 6	19·0	3500
1893	Havock	240	180	18 5	7 5	26·7	3000
1895	Janus	280	200	19 7	6 7	28·0	3900
1896	Mallard	310	210	19 5	7 2	30·7	5700
1899	Express	430	227½	22 0	9 0	33·0	9250
1901	Lively	300	218	20 0	5 6	30·0	6000
1902	Unnamed	400	—	—	—	25·2	—
1902	Scout class	500	—	—	—	—	—

The *Express* is not typical of the British boats of the latest type, and the *Lively* may be accepted as representative of their design. She has engines for an indicated horse-power in excess of that of the battleship *Colossus* or *Edinburgh* of 9420 tons, packed away in her delicate little hull, and equal to those of the cruisers of the *Amphion* class of 4300 tons. Such is the cost of high speed. Now the intention of the authorities is to revert to a larger build of "destroyer." Probably the builders, who will submit their own designs, will be able to produce thoroughly seaworthy craft, with a reliable speed of something just over 25 knots. The said "destroyers" are thus described by the Admiralty:— The new craft.

"They will be of a modified type, of larger displacement, stronger construction, and with improved accommodation for officers and crew as compared with existing vessels of the class. These modifications will tend to improve the sea-going qualities of the vessels. The official trials will, however, be made at the deep-load draft, a speed of 25½ knots under this condition being specified."

The "Scout" class, on the other hand, are intended for the rough-and-tumble of general Fleet work. Only recently have the naval authorities recognized that "destroyers" are too frail to be hacked about in fine and foul weather. Now Lord Selborne has announced—

"When 'destroyers' were first designed it was not contemplated that they would be frequently used otherwise than as working from a fixed base. Experience, however, has shown that vessels with greater sea-keeping power are required for service with Fleets, and accordingly the Board

have decided both materially to strengthen the type of future destroyers, and also to create a new class altogether, to which the name 'Scout' has been given. It is proposed not to initiate a design for this new class at the Admiralty, but to invite the private shipbuilders of the country to give the Navy the benefit of their creative ingenuity by submitting designs to fulfil certain stated conditions."

Danger of increased size.

The unfortunate fact is that the increase in size in torpedo-craft will give a bigger target, and thereby defeat one of the ends that were in view when this special "destroyer" type of vessel was introduced. The new "scouts" will be something in the nature of experiments, and unless the speed is a real sea-speed, as opposed to a mere trial speed, they will not deserve to be regarded as torpedo-boat "destroyers." The older French *torpilleurs de haute mer* made at their trials between 20 and 25 knots, but they are so small that they could not maintain anything approaching this rate at sea, and, moreover, carry so little coal that they could do slight service far from a harbour. The newest boats of this type have a legend speed of 30 knots (the *Forban* attained 31·2); but as they have from 15 to 18 tons of coal only, their radius of action is very limited. Our latest boats of the destroyer type can stow with ease from 80 to 95 tons.

In the building of torpedo-boat destroyers designers are confronted by the ever-recurring difficulty of making such a compromise of the desiderata, speed, radius of action and seaworthiness, as shall result in a craft which will be swift, reliable, present a small target to an enemy, be capable of remaining at sea for long periods, and be safe. Germany, it is not

without interest to note, has apparently little faith in fancy trial speeds. She has one boat of 32 knots, but those now in hand at Elbing are to steam only 26 knots. On the other hand, this change in construction in Great Britain, by a curious coincidence, is occurring at the very moment when the French, having derided our high speeds, are engaged in imitating us by building a number of 30-knot boats of the most gingerbread type.

A timely lesson.

The result of the *Cobra* disaster promises a revolution in these torpedo-craft that cannot fail to be of the greatest value. It is better that the awakening should come before war occurs, and tests in the most thorough manner the weapons that we have prepared. The loss of the *Cobra* and the series of minor mishaps drew prominent attention to the unreliability of many of the British torpedo-craft, and we have profited by the lessons in a fashion which redounds greatly to the credit of the Admiralty. They have not been afraid to reform the "destroyer," and the result is that, in place of craft of nominal and unreliable speed and doubtful seaworthiness, we obtain a fleet of small boats of less speed, but far less likely to meet with accidents, and with a rate of progress that can be gauged and depended upon with some certainty. Even if the mean sea-speed of the hundred or so of torpedo-boat destroyers is not now much over 27 knots (while some will not go above 25 or 26), this is in excess of anything which can be done by any of the battleships and cruisers of the world's fleets, and it is improbable that the foreign torpedo-craft, against which our boats

will be pitted, will be able to steam faster, though some of them have greater legend speeds. An offensive-defensive policy places this country at a considerable disadvantage in comparison with our enemies, since they will be able to use their craft from a fixed base in the most favourable weather, while we shall have to have flotillas to accompany a fleet at sea under all conditions. This is the reason why the Admiralty are fitting out a number of "mother-ships," which will go to sea with the torpedo-craft, with coal and stores to replenish the supply of the little vessels when it runs short. There is little doubt that if war occurred in the next few years, a large number of the best torpedo-boat destroyers would be directed to serve with the blockading squadrons, and already we have forty-eight at the Home ports and in the Mediterranean, ready for the call if it should come. Meantime we shall go on building "scouts," which, being larger, will be better able to keep at sea, and, in time, if this new type proves a success, it will entirely replace torpedo-boat destroyers for work with the squadrons away from a fixed base, and the existing class will be confined to duty in the neighbourhood of harbours. Under the circumstances, there is every reason for satisfaction at the measures which the Admiralty have taken since the *Cobra* went down. We shall have over 100 reliable "destroyers" besides 4 "scouts," and 23 new torpedo-boats, and about 20 or 30 of the older torpedo-boats, which may be regarded as useful for defence purposes. Now that the awakening has come, we may

congratulate ourselves that the Admiralty held their hands for so many years, and did not embark on a large programme of torpedo-craft.

Mr. S. W. Barnaby, of the firm of Thornycroft, in a paper read before the Institution of Naval Architects,* indicated that he was hopeful that it would be possible to produce "destroyers" meeting the Admiralty requirements as to stability without greatly reducing the speed. In the case of the experienced Thornycroft and Yarrow yards this anticipation may be realized because they have made light craft a special study, but Mr. Barnaby's optimism takes no account of those builders who have not devoted so much attention to the industry. In his opinion a higher standard of strength can be obtained without a serious diminution of speed; and though the new craft will not have as high a legend rate of steaming as the existing type had before they were strengthened, they will give a good account of themselves under ordinary service conditions. They are to be tried with a full load on board, and Mr. Barnaby pointed out that "they will not be as fast at a light draught of water as the present boats are in that condition, but their (trial) speed will be increasing all the time as the coal burns out, and the average speed should be considerably more than that obtained on trial." At present the Admiralty consider 25½ knots with a full load the standard by which to start building a series of strong and more reliable "destroyers," and it remains to be seen what the builders will be able to do.

* March 19, 1902.

A cheap weapon.

What is the use of "destroyers"? The boats lie low in the water, and are insignificant in size, and are cheap; but their powers—active, potential, and moral—may be great. We have no data on which to judge the success which will attend their operations in time of war. It is because their actual, as opposed to their moral, influence is open to doubt that we do well not to disparage these weapons. They may give surprising results when the crash comes. Well handled by cool and daring officers, it may be that their performances will exceed all anticipations; for in their powerful engines and their terrible weapons of offence they carry the wherewithal to sink ships costing twenty times as much. Each "destroyer" has two torpedoes, with from 150 to 200 lbs. of gun-cotton, each amply sufficient to end the career of any battleship or cruiser which is struck. The danger arises, not so much from the capabilities of a single boat, but from the operations of several. During hostilities they would hunt for their prey in groups, and it is not difficult to imagine the difficulty of defence by a battleship or cruiser against such hornets of the sea, completely encircling it, it may be; and if it be night-time, baffling and confusing the crew at the small quick-firing guns. Under the most favourable conditions it is possible that they would not be descried until they were quite near. As to this we have practically no evidence. In peace manœuvres these craft are necessarily handled with great care, because the admirals cannot run risks which in war-time would not occasion a second

thought if the possibility arose of sinking one or more of an enemy's large ships. Torpedo-boats of all types are cheap, they can be readily replaced, and the largest of them have fifty or sixty men on board, so that an admiral would not hesitate to risk even this number of lives on the chance of obtaining a decided advantage. Commanding officers will not be squeamish in endangering a handful of men when great issues are involved, and men will willingly accept the post of greatest peril.

Uses of torpedo-craft.

What are the chances of success by torpedo-craft? No better evidence on this can be adduced than that of Captain R. H. Bacon, D.S.O., the officer who has been placed in charge of the new submarines on account of his lifelong study of torpedo warfare. In the "Naval Annual" for 1896 he dealt at length with the *rôle* of the torpedo-boat of various types, including, of course, the "destroyer." With reference to the ways in which such craft can be used, he selected the following as the most important:—

Attack on a harbour or fleet in a known locality.

Blockading.

Keeping blockaded ports open.

Protection of narrow waters.

Accompanying and acting with a fleet.

Captain Bacon pointed out that "suddenness of attack, invisibility, rapidity of movement, as well as the large size of the target that the ship presents, are points in favour of the boat; whereas detection at a distance, errors in adjustment of torpedoes and director would help the ship." On the face of it, it is evident

that the chances in favour of the boat are considerable under favourable conditions, and the larger the number of boats attacking, the greater the possibility of success, presuming that they are able to approach with caution and without any of that "flaming" at the funnels, which is one of the torpedo-crafts' greatest disadvantages when going at a high speed. The great ship will have to be manœuvred with caution, for a large pecuniary and fighting value will be at stake; but in the case of the "destroyer," which may be lost without serious loss, the commander will run almost any risk in the attempt to put a more powerful adversary out of action. Torpedo-craft have their own disadvantages, but nevertheless in skilful hands they are potential weapons of great power, and on that account they cannot fail to have an important influence on the action of the ships against which they are engaged.

Captain Bacon's opinions.

On the question of the capabilities of these vessels, Captain Bacon, after years of study, may be accepted as a credible witness, and he has stated:—

"The contention that boats are the arm of the weaker sea-power has been generally upheld by writers on the subject of naval warfare, and there is much to say for it, provided that the boats are slow and their uses restricted. But if the use of boats in war-time proves more extended than up to the present has been the practice in peace manœuvres, many cases will arise when boats will be of equal importance to the side possessing the larger or smaller number of ships. With increased speed and sea-going capacity, the functions of boats are largely augmented, and expand year by year. By

neglecting the consideration of every possible use of boats, and in not calculating on their use in every phase of naval warfare, we run the risk of finding ourselves confronted in war-time with unforeseen dangers, and perhaps may often experience times when a battleship and boat are of equal worth, and a superiority of ships is reduced and annulled by an inferiority in number of small craft.

"Though fully alive to the many important lessons that the study of past warfare affords us, we must still admit that no craft in the past was analogous to the torpedo-boat. The vessels that in olden time some writers have held to resemble them are 'fire-ships, flotillas, and praams.' The latter two were unable to destroy battleships, the former were chiefly dependent on a fair wind and tide. The comparison totally neglects the two essential features of the boat. We cannot, therefore, rely on the value of small craft in the old wars to teach the true value of the torpedo-boat in the future; we must be alive to the fact that we have ourselves, and perhaps opposed to us, vessels whose real value we cannot assess in peace time, but which possess possibilities of action unknown in times past, and which in the hands of skilful and resolute men will leave a broad and deep scar on future naval wars. By a short and absolutely arbitrary time allowance in attack, by too great an estimate of the accuracy of night gun-fire, and by a general limitation of the functions of boats due to the requirements of annual manœuvres, we are gradually lowering the estimate of the danger to be expected from boats in war-time, weapons which the majority of authorities agree will be most largely used against us. This is to us a very serious danger.

An expectant attitude.

"The yearly manœuvres are of the greatest value to all who take part in them, and serve to show to a large extent the value of our modern weapons, but let us be very

careful how we are influenced by decisions which are mainly the outcome of arbitrary rules, and which cannot be regulated by direct experiment. How many of the greatest achievements of our officers, men, and ships in the old wars would have placed them out of action if they had occurred in manœuvres? How many cutting-out expeditions would have succeeded if time allowance, instead of hurried and difficult night shooting, had been the criterion of success? In these respects history is certain to repeat itself. Science has placed weapons of unknown possibilities in the hands of men, we hope of capabilities and *morale* equal to that of their forefathers, and when the crash of war comes, and possibilities are changed into realities, we may expect to find torpedo-boats a far more important factor than they are apt to be considered in peace time."

This is the line that the Admiralty have taken for some years past. Whatever may be the *rôle* of the torpedo-boat and "destroyer," we must be prepared. Flotillas are continually at sea, so as to familiarize officers and men with such craft, and to enable the former, all of them lieutenants of daring, to study the peculiar tactics applicable to these craft. This work has been carried on for years past, and now a further step has been taken. Following on the appointment of Captain C. E. Madden to take charge of all the torpedo-vessels in the Mediterranean, the authorities have selected Captain C. G. Dicken to superintend the work of the flotillas at home. Similar systematic measures are being taken by the French, and we now have the spectacle of the nations on both sides of the Channel carefully studying the capabilities of these craft of unknown powers.

CHAPTER VIII

THE RÔLE OF THE BRITISH SUBMARINE

Centuries of experiment.

WITH the exception of Germany, all the leading naval Powers are now engaged in experimenting with submarine or submersible boats. The British Navy includes five of this type, and the fact that after the preliminary tests already carried out at Barrow-in-Furness with the early boats, the Admiralty have decided to order four more of an improved type, may be accepted as evidence that the supercilious attitude towards this new engine of war has been abandoned. For years past the French naval authorities have devoted themselves to the study of the problems which submarine navigation suggests. They have persevered in the face of the most persistent difficulties, and have conquered many of the obstacles which have baffled investigators for nearly two thousand years. It is curious to recall that at the siege of Troy, and also at Syracuse, primitive forms of the submarine were used. Right down through the centuries inventive genius was continually directed towards the elucidation of the problems of navigation beneath the surface. In every country in the world attempts were made from time to time to evolve a craft which, sinking below

the water, could be propelled with a measure of celerity. None of these attempts brought us much nearer the realization of the hopes of enthusiasts, but at last the advantage to be gained through the use of submarines in naval warfare appealed powerfully to the French imagination and inventive genius. For many years experiments have been in progress, but not until 1891, when M. Zédé designed his surprising little boat, did the submarine come within the range of practical discussion. In the intervening ten years the French Ministry of Marine have devoted much time and money to the perfecting of this type of warship.

It has been the custom in this country to deride all the experiments which have been made on the other side of the Channel, and to minimize the results which have been attained. This attitude was persevered in for many years, irrational and unreasonable as it must have appeared to any one who gave the matter any thought. It is impossible to imagine what purpose French people could have in exaggerating the powers of their special weapon, since ordinary prudence would lead them to depreciate a method of warfare from which they hope so much. The best proof of the genuineness of the results which have been obtained in the long series of trials in French waters is to be found in the fact that a large sum of money has been already expended in building submarine and submersible boats, and that, within a few years, the Department of Marine will command sixty-seven ships of this type.

The new craft in France.

This new engine of war is not being treated as a toy. As soon as the vessels leave their builders they are put through a series of exhaustive tests, and then are sent to one of the naval ports in the Channel or the Mediterranean. Gradually the French authorities are forming mosquito fleets at each of the chief bases, and they are being placed in charge of experienced officers. Just as we, in this country, maintain flotillas of destroyers always in commission for the purpose of training officers and men, so the French are drilling a large number of their *personnel* in the effective use of the submarine. For several months past these boats have been put to the most practical trials. On battleships and cruisers entering port the submarines have been despatched to endeavour to make attacks without being seen, and on several occasions they have succeeded beyond expectations; in theory, about half the larger ships of the Northern Squadron have been sent to the bottom of the sea. We are faced with the certainty that within a few years all the ports of France on both sides of the Mediterranean and on the Southern shores of the English Channel will have a collection of these devilish craft, not only for purposes of defence, but it may be to carry out attacks upon passing ships. The enthusiasm of the French people for the submarine, and the interest with which American naval officers have studied all the problems that these craft suggest, have suddenly reminded the world that the submarine has come as a permanent naval weapon. America already possesses, or will soon possess, eight boats.

Brazil, Italy, and Russia are following in the steps of the British Admiralty, and are building experimental craft. It is impossible any longer to regard submarine navigation as a Jules Verne dream.

Admiral Dewey's opinion.

Five submarine, or rather, submersible boats for the British Navy have already been launched, and, under the command of Captain R. H. Bacon, D.S.O., are being submitted to tests which are bearing fruit. It has already been found possible to introduce improvements. The British boats are built under license from the Holland Company, whose model has commended itself to the American people. The early boats of this type lacked some of the essential desiderata; but, nevertheless, experiments in American waters have convinced Admiral Charles O'Neill, the Chief of the Bureau of Navigation, and other officers, that these craft would prove of the greatest service for coast defence. The *rôle* within this limit is now generally admitted. Admiral Dewey, one of the few naval officers who have had experience of the difficulties of blockading a steam squadron in its own harbour, has definitely stated that, if the Spanish had had two submarine boats, he could not have held his ships off Manila. This admiral has been one of the most enthusiastic advocates of the submarine. Surely no one is better qualified to speak of the *morale* effect of this craft than an officer who knows what war is, and has also experience of a Holland submarine, for he was once present at an exhaustive trial. Admiral Dewey has pictured the nervous strain to which the crews of

a blockading squadron would be subjected if they were conscious of the presence of submarines which might at any moment slip out and attack them in the darkness—or daylight, for the matter of that. The torpedo-boat and the "destroyer" are sufficiently terrifying to the nerves of the strongest sailor; but how much more potent must be the influence of a vessel which may make its attempt beneath the surface of the water, unseen by the watchkeepers on deck!

British boats described.

The new British boats are an improvement upon the type which took the fancy of Admiral Dewey, and forced from Admiral O'Neill a confession of the utility of these little craft for harbour protection. The minute details of their design are naturally regarded by the Admiralty as secret. The British craft have been built in isolated and carefully locked sheds at Barrow-in-Furness. Since the vessels took to the water, Captain Bacon has maintained vigilant watch and guard over them. It speaks well for the discipline of his staff and their devotion to national interests that nothing of importance connected with the trials has so far leaked out. Some sensational stories have been published, but they have not been a true representation of the facts. Instead of attaching any importance to unofficial and unauthorized reports as to the design and capabilities of these vessels, it is wiser to accept the statement which was made some time ago by Lieutenant A. T. Dawson, a director of Messrs. Vickers, Sons, and Maxim, the builders, in a paper which he read

at a meeting of the Institution of Mechanical Engineers.

"The dimensions of the submarine boats which are being constructed for the British Navy are: length over all, 63 feet 4 inches; beam, 11 feet 9 inches, with a displacement when submerged of 120 tons. One torpedo-expulsion tube is formed at the extreme forward end of the boat, and four of the 18-inch Whitehead torpedoes are carried, the gear being arranged so that the torpedo may be discharged with the boat stationary or running at any speed, and when the vessel is awash or submerged.

"The scantlings of the hull have been designed to withstand the pressures consequent on submergence at a depth of 100 feet from the surface, the double-bottom tanks being utilized for ballast and storing purposes. Ingress and egress are through a conning-tower of armoured steel 4 inches thick and 32 inches in external diameter, fitted with observation ports. The propulsion of the vessel awash is by a gasoline engine with four single-acting cylinders water-jacketed, actuating pistons of the trunk type, with long surfaces, the connecting-rods being attached direct to the pistons. The inlet and exhaust valves are of the poppet type, and are in the cylinder heads, the levers by which they are operated being actuated by hand, mounted by sleeves keyed to the cam-shaft running alongside and near to the top of the cylinder. The cam-shaft makes one revolution for every two of the main crank-shaft, and the motion is trans mitted by two pairs of skew-gears through a vertical shaft.

"The electric ignitors are actuated by eccentrics also from the cam-shaft; the movable and fixed electrodes are

fitted with platinum points. There being four cylinders, it follows that there is an impulse for each revolution, and the speed may be varied from 200 to 260 revolutions per minute, giving a maximum power of 190 i.h.p. The boat has one propeller with blades, and the speed awash is expected to be 8 knots. Fuel is to be carried for a radius of 400 miles at this speed.

"Propulsion when submerged is by an electric motor, which, like the gasoline engine, drives the shaft from the propeller through gearing with clutch connection. This gearing enables both gasoline engine and motor to be at a lower level than the shaft, which is on the centre line of the boat. For diving, the boats are fitted with horizontal as well as vertical rudder, while at the same time a simple system of automatically arranging the disposition of water ballast is fitted to overcome any lack of horizontal stability consequent upon the diving action. Automatic means are also provided for determining the angle of diving or of rising to the surface, and to obviate submergence to excessive depths. At the same time hand-gear for most purposes is fitted."

An American officer's "notes."

Some further details, which have not hitherto appeared on this side of the Atlantic, have been published by Lieutenant Orlo S. Knepper, U.S.N., in some "notes" he has furnished to the United States Naval Department,* and since they come from an officer who has made a special study of this type of submarine, they have a special interest, though in one or two particulars he repeats Lieutenant Dawson's facts :—

"The vessels are to be provided with a means for

* "Naval Progress," July, 1901.

expelling torpedoes while in the following conditions and positions: At rest or during run on the surface; before or after submergence; while awash, at rest, or at full speed, with a sufficient portion of the conning-tower emerged to allow observation by the navigator while running submerged. All the necessary appliances will be installed to make certain and safe the accomplishment of these conditions.

"The main engines will be of gasoline type for surface-propulsion, and of 160 i.h.p. The fuel-supply will allow of a maximum run of about 400 knots. The maximum speed on the surface will be about 9 knots per hour. The main motor will be of the electric waterproof type, giving the vessel a speed of 7 knots when submerged. The storage battery will have a capacity for a four hours' run at 7 knots.

"The engines will be provided with automatic means of moving the rudders to the desired positions, and automatic means to prevent the vessel inclining to excessive angles during diving or rising, to keep the depth of submergence constant, to bring the vessel to a horizontal position at the desired depth, and to prevent diving to excessive depths. Both steering and guiding are to be produced by hand-gear if desired.

"In diving, the boat will be submerged to an awash condition, with only the conning-tower ports above water, then dive at a small angle until the proper depth is reached, when, through automatic or hand-operated means, the boat is brought to a horizontal position. After the discharge of the torpedo from the fixed bow-tube, the compensation for the weight of the torpedo expended is automatic and almost instantaneous, causing only a slight change of trim for a few seconds. Provision is to be made for quick rising and diving for observation,

the time for the appearance of the conning-tower above water being dependent upon the skill of the navigator.

"The official trial will consist of a surface run of 10 miles at 7 knots and a submerged run of 2 miles at 7 knots. At the end of the submerged run a service torpedo will be discharged and strike a target 150 feet long by 16 feet deep, the upper edge of the target being awash and placed at right angles to the course. During the submerged run the boat will not come to the surface more than three times from the time of starting until the discharge of the torpedo, the duration of each appearance not to exceed one minute. Suitable masts are to be provided for observation of the boat's movements while submerged.

"The plating and frames are to be of steel, of sufficient size and thickness to withstand the pressures at depths not over 100 feet. Bulkheads are to be located to provide safety in the event of collision and to stiffen the hull as a whole. The superstructure is to be located to allow of an above-water deck 31 feet long when the vessel is light for surface-running. The conning-tower will be of armour steel, having an outside diameter of 32 inches and a minimum thickness of 4 inches, and provided with ports for observation.

"In addition to the ports the vessels will be lighted by incandescent electric lamps.

"Compressed air will be stored aboard, and ventilators will be provided for the circulation of outside air through the vessel. A positive exclusion of gasoline vapours from the interior of the boat will be possible, and safety-valves will be provided to relieve any excess of pressure in the vessel over that of the atmosphere.

"The armament will consist of one torpedo-expulsion tube, located at the extreme forward end of the vessel, opening outboard, 2 feet below the light water-line. The vessels will have capacity for carrying 5 torpedoes, each 11 feet 8 inches long."

Their striking features.

Such are the main features of the new boats which have been recently added to the effective strength of the British Navy, for the first five have been practically completed. They are differentiated from other submersible boats by the fact that, instead of sinking slowly on an even keel, they dive porpoise-like, until they have reached the desired depth. One of the most surprising features is that, whereas most of the French craft take several minutes to become completely submerged, the British boats can sink out of sight in a few seconds. This has been established by experiment. They can steam awash at a fair speed, and in this condition nothing is observable except the small conning-tower, which is so small that it would probably be indistinguishable a mile distant. The craft can cruise for a considerable period in the awash condition, and it is conceivable that in an attack upon an enemy's ships they would make their approach in this manner; and not finally disappear beneath the surface until they had warning that their movements were observed. So quickly can they sink completely out of sight that at a mile distant they can dive between the discharge of a gun from the distant ship and the arrival of the shot.

Substitute for the periscope.

It has been wrongly supposed that the British submarine will be blind when it disappears below the surface. As is generally known, the French boats are fitted with a periscope, a type of camera obscura, which enables the officer in charge of the submarine to see what is happening on the surface while remaining completely submerged. In the British boats a substitute for the periscope has been evolved, and Lieutenant Dawson has given the assurance that the arrangement is not inferior to that of which the French have boasted. It is really not essential to the submarine that it should be able to travel for a long period beneath the water, provided it can sink out of sight with sufficient rapidity. This the British boats do, and it is probable that in the defence of a British port they would remain awash until they came within range of an enemy's guns. Then the officer would judge the distance between him and his foe; and, even if the British type of periscope is defective, which there is no reason to suppose is the case, he would be able to steer his ship beneath the waves with not less exactitude than is done in a Channel fog. Ships passing round the British Isles only too frequently have to depend entirely upon compass and chart, and practically feel their way. If, as Lieutenant Dawson prophesies, the British submarine possesses sight when submerged, the officer in command will be in a superior position to his colleague who is navigating a "destroyer" in foggy weather.

Trials of a new American boat.

Although nothing is known of the preliminary tests to which the British submarines have been subjected, we are not altogether without material for judgment. The Holland Company, of the United States, have completed a craft, the *Fulton*, in practically every respect similar to the five earlier British boats, and she has been tested in some degree at New Suffolk, with satisfactory results.*

On November 21, 1901, Baron Fersen, Russian Naval *attaché* at Washington, with Lieutenant W. C. Herbert, U.S.N., representative of the Bureau of Steam Engineering, were present at a test of the *Fulton*. She made a trip under water, and several dives. The little boat was put through every manœuvre known by the builders without a single failure in the final result. On a run of two miles, ten seconds were occupied in making an observation in one of the "porpoise" dives, and a torpedo was fired within three feet of the centre of a target. The Russian representative expressed himself as highly pleased with the trial.

A more exhaustive test of the boat's powers occurred on November 22, when the Japanese Government representatives, Commanders Nishi and Sato, and Lieutenant Ide were aboard. The Japanese officials were first given an opportunity to witness the evolutions of the *Fulton* from the company's boat *Kelpie*. After running awash for half an hour the *Fulton* was submerged, running a mile in 10 minutes and 20 seconds; she remained submerged for 11 minutes and

* *Army and Navy Journal*, New York.

20 seconds, and during the submersion "porpoise dives" were made. The "porpoise dive" consists in raising the boat while practically submerged, taking observations of the target to be hit and then descending immediately below the surface to accomplish the firing of the torpedo. On this particular run five dives and observations were made as follows, the time given being the seconds actually occupied from the time the conning-tower was exposed above the water until it disappeared under the surface, the boat all the time going ahead: first dive, 7 seconds; second dive, 11 seconds; third dive, 6 seconds; fourth dive, 5 seconds; fifth dive, 5 seconds. No torpedoes were fired. The record of the last two dives is remarkable, and the company's officials claim that the same can be done in actual warfare.

From the *Kelpie*, the Japanese officials were next taken aboard the *Fulton*. The conning-tower was closed and the boat submerged, several dives being made for the edification of the visitors. In all nine dives were made, the average length under water being 10½ minutes, and the average speed attained was 5½ knots, with an average of 50 horse-power while under the surface. During the time the boat was submerged an almost even keel was kept, apparently not varying more than ten degrees at any time.

A night under water.

A severe under-water test began at 7 p.m. on November 23, when the *Fulton* was submerged in 15 feet of water to the bottom of Peconic Bay, which left the top of the boat 6 feet from the surface of the

water at high tide. The boat remained on bottom for 15 hours, coming to the surface at 10.30 a.m., November 24. Those on board were Lieutenant Arthur MacArthur, U.S.N., Rear-Admiral John Lowe, U.S.N. (retired), Captain Frank T. Cable of the Holland Torpedo-boat Company, and her crew of five men. The party all stated that they passed a very agreeable evening. Two men were placed on watches of four hours' duration. The last shift, however, did not have to serve so long, the time claimed having been fulfilled. The men spent some of the time in playing cards and reading, the rest of the time in sleeping. The air in the vessel, it was said, was perfectly good. Captain Cable stated that the specified time of fifteen hours could have been extended to a much longer period, as none of the stored air had been used except that which leaked from a hundred-pound cask.

Future of the submarine.

The assurance may be accepted that the submarine is a permanent addition to the engines of war of the naval Powers. It is too early to accurately define its *rôle*.* Its utility for harbour-defence cannot, however, be questioned. French tests have amply demonstrated its uses in this connection. It may be that the improvements which will be suggested by the trials of the early British boats will open up a vista of action

* Mr. W. Laird Clowes has never been a submarine enthusiast, but at a meeting of the Institution of Naval Architects on March 19, 1902, he said: "It seems to me that the submarine, even if it be carried no further than at present, means the doom of the old-fashioned blockade. But I am sure that the submarine will be carried very much further than at present, and that already we may see traced before us the lines along which it is destined to develop."

beyond the dreams even of the staunchest believers in the submarine. We have seen the torpedo-boat give place to the swift "destroyer." We have witnessed the *rôle* of the destroyer enlarged beyond the original idea of defending harbours. We have evolved a type of boat which the Admiralty have used with fleets in Home waters, while the new class of ship, the *Scout*, will accompany our squadrons when they leave to blockade an enemy's forces. So certain are the Admiralty of the utility of "destroyers" away from a fixed base that they are providing a number of "mother ships" which will serve as moving bases with the flotillas, supplying ammunition, food, and stores, as occasion requires. It is not beyond the bounds of possibility that the submarine will also develop into an offensive weapon. Several of the French boats have made long cruises in the open sea. The *Narval* can travel over five hundred miles at a moderate speed, and when the necessity for submergence arises she can theoretically proceed for over seventy miles under the surface. The significance of this statement will be appreciated if the narrowness of the Channel is called to mind, and it is remembered how many British warships must continually pass to and fro in case of hostilities with the French.

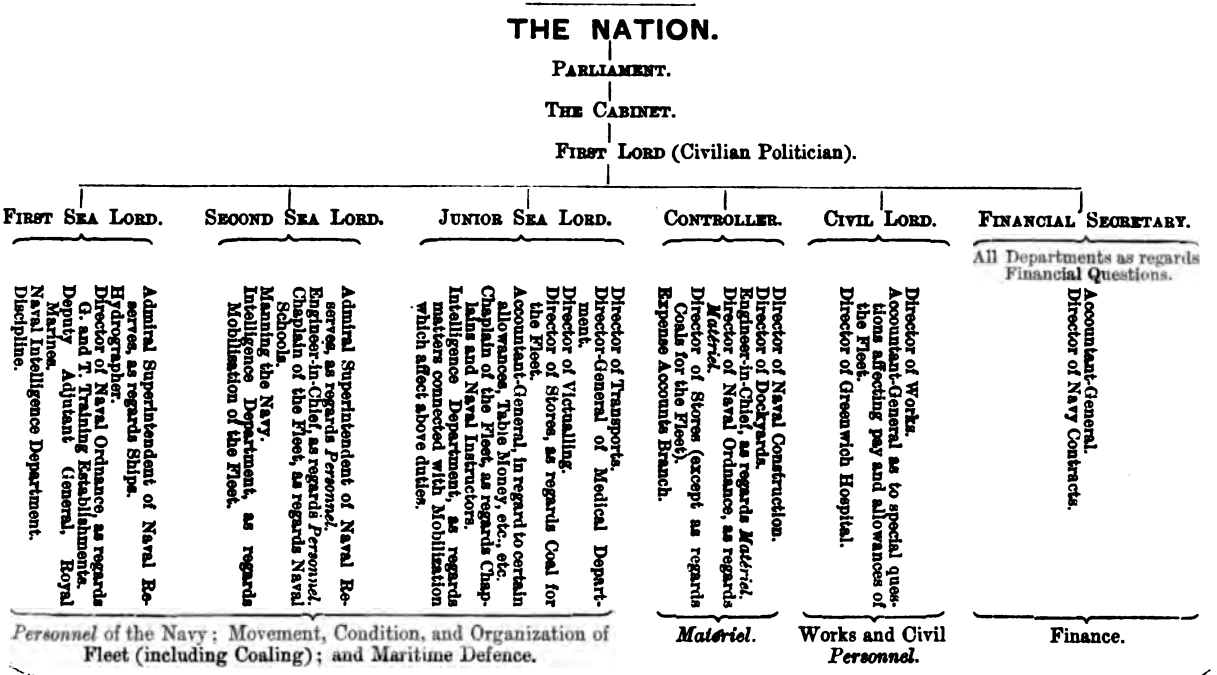
A cheap weapon.

It is probable that when the next war occurs we shall find the Channel and some portions of the Mediterranean infested with these craft. Under these circumstances it is the highest wisdom to study their construction and uses, even if it is found that their

range of action is limited to harbour-defence. We should use the submarine, and persevere until we find an antidote which can be employed by our Fleet when blockading an enemy's force in harbour. The submarine is an undoubted menace to the fleet of battleships and cruisers which we have constructed at such great outlay, and it is because a submarine boat can be built and fully equipped for between £25,000 and £40,000 that it has won the enthusiastic adherence of the French people. Its cheapness is one of its attractions. It is wise to be alert to all the developments of science, but, at the same time, it is unwise to embark in ignorance upon a new line of construction until its advantage is clearly understood. The Admiralty have decided very wisely to abandon the hostility of the past, and to experiment on an adequate scale with this new engine of war. This attitude is thoroughly in keeping with the new spirit which may be recognized at Whitehall. The determination to test all new weapons is a hopeful sign for the future. It is an indication that we are burying that harmful spirit which led us to oppose ironclads, breach-loading guns, quick-firing weapons, and many other modern developments. In all departments of naval administration this spirit of intelligent inquiry is evidenced, and is one of the most encouraging signs for the future.

HOW THE NAVY IS RULED

HOW THE NAVY IS RULED.


THE NATION.
PARLIAMENT.
THE CABINET.
FIRST LORD (Civilian Politician).
FIRST SEA LORD.
SECOND SEA LORD.
JUNIOR SEA LORD.
CONTROLLER.
CIVIL LORD.
FINANCIAL SECRETARY.
All Departments as regards Financial Questions.
Admiral Superintendent of Naval Reserves, as regards Ships.
Hydrographer.
Director of Naval Ordnance, as regards G. and T.
Deputy Adjutant General, Royal Marines.
Naval Intelligence Department.
Discipline.
Admiral Superintendent of Naval Reserves, as regards Personnel.
Engineer-in-Chief, as regards Personnel.
Chaplain of the Fleet, as regards Naval Schools.
Manning the Navy.
Intelligence Department, as regards Mobilisation of the Fleet.
Director of Transports.
Director-General of Medical Department.
Director of Victualling.
Director of Stores, as regards Coal for the Fleet.
Accountant-General, in regard to certain allowances, Table Money, etc., etc.
Chaplain of the Fleet, as regards Chaplains and Naval Instructors.
Intelligence Department, as regards matters connected with Mobilisation which affect above duties.
Director of Naval Construction.
Director of Dockyards.
Engineer-in-Chief, as regards Material.
Director of Naval Ordnance, as regards Material.
Director of Stores (except as regards Coals for the Fleet).
Expense Accounts Branch.
Director of Works.
Accountant-General as to special questions affecting pay and allowances of the Fleet.
Director of Greenwich Hospital.
Accountant-General.
Director of Navy Contracts.
Personnel of the Navy; Movement, Condition, and Organization of Fleet (including Coaling); and Maritime Defence.
Material.
Works and Civil Personnel.
Finance.
The PERMANENT SECRETARY superintends all correspondence in the Name of the Board.
THE FLEET.

CHAPTER IX

THE WAR-READINESS OF THE FLEET

THE British Navy is an organization for war, and it is always on active service. On only one day of the year, Christmas Day, is the ever-watchful patrol of the Seven Seas interrupted, and then only for a few hours. The naval coal bill amounts annually to £1,500,000, which may be accepted as one item of evidence that no officers and men are more at sea than those of this country, and as in the past, so to-day, there are no men-of-warsmen to compare with those of our service in all that goes to the making of a reliable sailor. The average officer may not be highly scientific, but he is practical. The crews are preparing week in and week out for the Armageddon of the seas, but that is very different from saying that the British Fleet is always on a war footing. It never has been on a "war footing" in our time during peace, but its state of readiness for war, which is a very different matter, never reached a higher standard than to-day. The strength of individual squadrons is no true indication of supremacy. British power rests on the whole Navy and its ability to strike and strike and strike again; on its

Perennial preparation.

mobility, an important offensive and defensive quality; on the radius of action of its ships, which is governed by their fuel-carrying capacity and the equipment of the coaling-stations that occur in every quarter of the globe; on the reserve of stores; on the courage and training of the men; on the nerve and tactical ability of the officers. The British Fleet is a mobile force that can combine and divide with surprising ease as strategical conditions may dictate. It depends for its future glorious achievements not on breakwaters, behind which to laager in terror, or on the provision of laundry, hospital, and meat-store ships, but on its inherent strength and capacity to keep the seas. The sea is all one, and the Navy is all one, as Lord Selborne has said. Take the Fleet as it is to-day, it is the finest force that has ever ploughed the waters, and behind it is an organization that, whatever its faults and its unbusinesslike qualities, is not a second War Office. The claim that the supremacy of the seas—in the ordinary acceptation of that phrase—has been lost is one of the most ill-founded panic cries of recent years. It has not been lost, but it may be lost if we do not, in coming years, carefully watch and checkmate our more serious rivals, Germany, France, and Russia.

The points vital to the Empire are the "near seas" and Far Eastern waters. Here, massed naval forces are maintained. Never were these squadrons better fitted for any work that may be required of them. The admission that their strength would have been immeasurably greater but for the disastrous shipbuilding

delays does not detract from this assertion. While wishing that the Admiralty had not permitted themselves to be hindered in their task of reorganizing these forces by the creeping paralysis of the past five years, there is some occasion for congratulation in the promise of the near future. In the past two years, also, the Navy has been provided with all the requisites for war —armour-piercing projectiles, ample supplies of ammunition, gun-sights of the most approved design, and all the accessories necessary to efficient men-of-war.

In case of war.

If war occurs, what would happen? The Channel Squadron—a misnomer, by the way—would hasten to the eastern end of the Mediterranean in order to co-operate with the squadron in those waters under Admiral Sir Compton Domvile. Nineteen battleships would thus be massed with a considerable number of cruisers, though far too few. Immediately the Reserve Squadron of ten obsolescent battleships—the Home guard—would hold the Channel, with the support either of the Cruiser Squadron or of other scouts specially commissioned from the Fleet Reserve. Every torpedo-craft would be assigned some duty with the squadrons. Meantime, organized confusion would prevail in the three principal dockyards, commissioning the ships in the A division of the Fleet Reserve, which have coal, stores, and most of their ammunition always on board, with their crews assigned to them in the books of the naval depôts. Workmen would be hastening forward by night and day labour new men-of-war and vessels undergoing repairs. Similar haste would be witnessed

in the great private establishments completing ships being built by contract. The Royal Engineers and the respective naval Commanders-in-Chief would, or rather should, co-operate to place the defence of the ports on a war footing: that they would do so is problematical, for in past manœuvres any attempt at joint action has signally failed. Boom defences across the principal harbours would be placed in position, if necessary, guns on the shore fortifications, which have been modernized at great expense, would be tested, search-lights would be prepared for use, and other precautions taken. Then England would be on a war footing. While the first line was preparing to deliver the early blows in the war, the unrivalled resources of this country would be got ready to drive home an early success or retrieve any reverse. Would the picture of these squadrons in the "near seas" suggest to any "man in the street" that British supremacy had been lost, when his eye travelled over the map, and he saw that in distant waters the foreign squadrons of the Empire were still in hand, ready to go anywhere and do anything?

The annual test.

We have an organization for war that is probably the most perfect in the world, though capable of great improvement in detail. In a sense it exists only on paper. It has never been fully and effectively tested. In our generation the British Navy has never been mobilized, and it is doubtful if it is possible that it can be put to an effectual trial until war actually threatens. It is sometimes forgotten that the mobilization of the Fleet would irritate all the Powers, and probably

jeopardize those diplomatic negotiations which are ever in progress; it would upset the money markets of the world; and, since the men of the Reserve are engaged in civil occupations, it would disorganize many industries. In short, the price that would have to be paid for a surprise mobilization of the Navy would be very great. As a test of our organization we must be satisfied with the partial mobilization which takes place each year, and attempt from experience gained on these occasions to judge how far the machinery works efficiently.

Unfortunately, there is nothing in the nature of a surprise about these annual assemblies of ships. Every one knows that about the middle of July orders for a partial mobilization will be issued by the Admiralty. The result is that for months in advance the officials at the depôts, where the seamen and others are lodged when not at sea, and the staffs at the dockyards give their minds to anticipating the demands that will be made upon them, and from the inquiries made from time to time at Whitehall they are able to make shrewd guesses at the requirements they will have to meet. They do not by any means work in the dark; consequently the test is not satisfactory. There is this consolation, however, to be drawn from the limited experiences of the last few years. Formerly the results attained were far from reassuring, while year by year, as the organization has been improved, the partial mobilization has been carried out more satisfactorily and smoothly, and last year the assembly was effected with conspicuous success.

It may be well at this point to explain what this annual fixture really means. In Home waters there are always in commission two squadrons, the Channel and the Reserve (in addition to the new cruiser squadron), and each summer the authorities order the two fleets to rendezvous at Torbay and Portland respectively, and there they are joined by a certain number of ships which are commissioned from the Fleet Reserve.

Personnel.

In this manner the Admiralty assemble each year an imposing array of ships, in what appears to the general public a surprisingly short time, under the command of four admirals, and they put to sea for a period of about six weeks. As a final and conclusive test of the fleet for war, these partial mobilizations may not be all that one would desire, but they do indicate in some measure that the machinery exists; and we have had no such exhibition as was made at Toulon last summer, when the French Fleet was unable to coal owing to the lack of proper arrangements at that arsenal. We have a large number of ships, and a large proportion of these are ready at short notice to hoist the pennant and put to sea to reinforce the squadrons, and we have a large body of officers and men.

The Reserves.

In ten years the number of "regulars," the standing Navy, to borrow an Army phrase, has been doubled, and we have a Reserve force. The latter is quite inadequate to meet the wastage of war, but the fact remains that careful calculation shows that we have sufficient men, as the result of extraordinary measures to remedy the errors of the eighties and early nineties, to send

every man-of-war which would be required to sea. This is matter for satisfaction, and in regretting that it is not possible to point to the existence of a larger reserve force, it must not in honesty be forgotten that the Admiralty have had to face many difficulties. Viscount Goschen in his administration made determined efforts to solve the problem—How to build up an adequate naval reserve in face of the decreasing number of British-born seamen in the mercantile marine. He did not succeed, and year by year the Naval Reserve has been dwindling. It is hoped that a considerable force may be obtained from the seamen of the Royal Navy who leave the King's service at the end of twelve years without pension. They are being offered inducements to join a new body known as the Royal Fleet Reserve. The Admiralty have already secured about 7100 men, and it is hoped that in a few years the number will rise to 15,000. These men, trained in all that goes to make good men-of-warsmen, will be a most valuable force, and it is probable that by the resuscitation of the disbanded Naval Volunteers further additions may be made to the "stand-by" strength of the Fleet. There are other problems in the manning of the Navy that require attention, among which is the scarcity of mechanical ratings. Now that the Admiralty have awakened to the fact that the men of the Fleet require a better diet than has hitherto been provided, and that they must offer rates of pay which will bear comparison with those ruling ashore, it is reasonable to expect that there will be less unwillingness

to accept service at sea. Much may be expected from the introduction of the new dietary scale recommended by Admiral Rice's Committee.

Official inquiry.

None too soon, two committees have been appointed —the one by the Admiralty, to inquire into the manning of the Navy; and the other by the Board of Trade, in the hope of finding a remedy for the growth of the foreign element in the mercantile marine, which is so grave a national peril. These are two most serious problems, which have hitherto defied solution. On the one hand, we are able to get as many boys as are wanted for the Royal Navy, but the service does not attract a sufficient number of stokers and mechanical ratings, and the result is a considerable shortage. In spite of the difficulties with which they have been faced, the Admiralty have succeeded in immensely augmenting the *personnel* of the Fleet. In fact, it has been doubled in little more than a decade. It now stands at 122,500, or will do in the spring of 1903, if official anticipations are realized; and behind this regular force there should be reserves at least as numerous, whereas, all told, they number about 40,000. At the lowest estimate, we should have another 90,000 men to make good the wastage of war. Where they are to come from is one of the puzzles that have baffled successive Administrations, and under these depressing circumstances Lord Selborne has sought the assistance of a representative committee, in the hope that they may succeed where the Admiralty have signally failed. This body consists of Sir Edward Grey, M.P., Mr. J. Hall-Clark, Registrar-General

of Seamen, Rear-Admiral R. F. H. Henderson, C.B., Sir Alfred Jones, Commodore the Hon. Hedworth Lambton, Sir Francis Mowatt, and Admiral Sir Edward Seymour.

No Manning Committee ever had a wider range for inquiry than is covered by the terms of reference— Manning problems.

"(1) How far are the present systems in force for the provision of Reserves satisfactory or capable of extension, as to officers of all branches, seamen, stokers, marines, sick-berth staff, and other ratings?

"(2) How far can a Naval Volunteer movement be utilized to contribute towards the manning requirements of the War Fleet?

"(3) Is it feasible to form some auxiliary branch of the Royal Marines which could be made available for service on shore or afloat in time of war?

"(4) To what extent and in what manner can Colonial Naval Reserves be utilized to contribute towards the manning requirements of the War Fleet, bearing in mind that on the outbreak of war the men in reserve would be in the Colonies, and that, as at present arranged, the ships in reserve that they could help to man would, with some few exceptions, all be in home ports?

"(5) Are there any other methods besides those hitherto mentioned which can be recommended for the formation of Naval Reserves?

"(6) What training should be required from the Reserves of the different classes, under what conditions should it be given, what staff of instructors and equipment of material would it entail, and how should the cost be borne?

"(7) What should be the pay and allowances and conditions of service of the Reserves of the different classes?

"(8) How far is the number of Active Service ratings required to man the War Fleet at any given time affected by—

"(*a*) The total number of ships in commission in peace?

"(*b*) The number of ships in commission in peace which would not, in the opinion of the Admiralty, be of serious value in time of war?

"(9) Generally, whether and how, consistently with efficiency, Naval Reserves can be more fully utilized to supplement the Active Service ratings in peace or in war?

"(10) What will be the cost of any recommendations made, and how will that cost compare with an alternative increase of Active Service ratings?

"It will not be open to the Committee, without further instructions, to recommend any fundamental change in the Continuous Service System under which the Active Service ratings of the Navy are at present entered and trained; but they may make recommendations as to improvements in detail, and generally as to how far, consistently with efficiency, the Active Service ratings can be supplemented by Reserves. Moreover, if they arrive at the conclusion that the formation of an adequate Reserve is not compatible with the present system, they are requested to make a report to that effect."

No good purpose would be served in speculating as

to the results of the Committee's investigations. It may be that radical reforms will be recommended, but in any case it must be the hope of all well-wishers of the Fleet that some solution may be found for the present dangerous position. Ships we have, but the growth of the *personnel*, great as it has been, has failed to keep pace with the increase in the material, and until we have larger Reserves it is impossible to be satisfied with the war-readiness of the Fleet, which presupposes the existence of large Reserves. With a regular *personnel* of 51,000, France has a maritime conscription which would give her another 114,000 in case of war; while behind Russia's 59,000 officers and men are also large Reserves. A remedy must be contrived for the present difficulties in this country; for ships without adequate crews to fight them are absurdities, and that threatens to be our position if we are involved in a long and bloody war. Certainly we have no adequate provision for the heavy losses which will occur in battle.

The war machinery.

What shall be said of the machinery of recent evolution, on which, to a large extent, our power to place the Navy on a war-footing rests? At Whitehall there is a Naval Intelligence Department, and it is its business to organize the resources of ships and men, make plans for the supply of coal, water, victuals, ammunition, and other stores, study plans for defending the Empire, and see, in a general way, under the supervision of the First Sea Lord generally and the Second and Third Lords, to the readiness of the

Fleet for the strain of war, so far as the resources will permit. Connected with the Admiralty are a number of telegraph wires which are never asleep, and they communicate with the Naval Commanders-in-Chief at Portsmouth, Devonport, and Chatham, who are in supreme control of those arsenals, with a junior flag officer in each instance as superintendent over the technical and professional officials of the dockyard. These never-silent wires have been one of the weak points in the system of naval administration, as they rob the admirals at the ports of the power of decision that their long experience enables them to exercise more effectually than the civil officials at the London end of the wire. At last it has been decided to decentralize some of the authority which has been vested with the Admiralty, and give the port admirals wider discretion.

The Commanders-in-Chief and Admirals-Superintendent devote themselves to the organization of their resources in accordance with the plans of the Admiralty. These are the officers who are the levers of the machinery that has been invented to enable the Fleet to be placed on a war footing within forty-eight hours of the declaration of war; or, as is more probable, before war is declared, if the state of open rupture is preceded by a period of negotiation.

Ships. For the purposes of the naval organization, the Fleet is divided into several classes, which may be thus summarized—

(1) The squadrons afloat, consisting of ships in commission, with full complements of officers and men, and ammunition, and six months' stores, so that they can leave on any mission almost as soon as the cable tells the Admiral commanding the wishes of the Lords of the Admiralty.

(2) Ships at the three chief naval ports, Portsmouth, Devonport, and Chatham, which belong either to the Fleet or Dockyard Reserves, which are thus divided—

Fleet Reserve.—A Division includes all ships which can be ready for sea in forty-eight hours. These vessels have on board all projectiles and torpedoes above the six-pounders, and it has recently been decided to embark also the machine and small-arm ammunition and part of the explosives. Their bunkers are kept supplied with coal. Usually there is a small quantity of provisions on board, and into this division all ships returning from a period of service in fair seaworthy conditions are passed until they can be repaired, when they go into one of the other sections.

B Division includes all ships which can be ready for sea in thirty days. In most respects these vessels are in as forward a state in respect to ammunition, stores, and coal as those comprised in the A Division, but usually have repairs of a minor character requiring attention. As soon as the dockyard workmen are withdrawn they pass into the A Division.

C Division includes all ships which require more extensive repairs, but are not of such a character as to occupy a very long period.

Dockyard Reserve.—D Division includes ships that require a thorough overhaul before they can be permitted to go to sea again.

E Division includes vessels that are not likely to be again required as effective fighting-ships.

Men. In conjunction with this organization is a scheme for quickly manning the ships of the A and B Divisions as soon as the order for any of them to go to sea is received. These arrangements may be thus summarized—

I. In the naval depôts of Portsmouth, Devonport, and Sheerness, and in the gunnery and torpedo training establishments are from 20,000 to 30,000 men. All these seamen, stokers, and others, though they are ashore, have their places allotted to them on the ships of the Reserve, so that at a few hours' notice they could go afloat and take up their duties.

II. Round the coast are stationed the men of the Coastguard, only a proportion of whom could be spared from their important duties for service afloat.

III. The recently organized Royal Fleet Reserve, consisting of men who have served in the Navy or Royal Marines, and returned to civilian life. It is to be hoped that this force may number several thousand men,

but its success cannot yet be judged, and at present it has only 7100 men.

IV. The Royal Naval Reserve comprises merchant sailors and fishermen, who undergo a period of training in the ships of the Navy. Its strength is 28,000.

This is the machinery which actually exists for placing the Fleet on a war footing, not when the first shots are exchanged, as is sometimes supposed, but when it is evident from the preliminary negotiations that a peaceful settlement of a dispute may not be arrived at. The self-evident weakness is that no provision is made for the due organization of the officers who will be called upon to serve in the ships in the Reserve when it is decided to commission them. It should be possible as soon as an officer comes ashore on leave to assign him to one of the vessels in the Reserve, and give him to understand that he will be required to repair on board as soon as he sees from the daily press that the Admiralty have decided to mobilize the Fleet. In the event of no untoward event occurring during his period of relaxation, then the authorities would remove his name from the Reserve ship, and dispose of him in the active Fleet. Further steps might also be taken to enable a proportion of the officers of all branches to become familiar with the topography of the men-of-war on which they will serve in case of hostilities, so that when the pennant is suddenly hoisted in view of some national danger they shall not be strangers to their new environment. These

are two reforms which, in the opinion of experienced officers, present no difficulties, and would conduce greatly to the efficient working of the admirable machinery which has been created for the mobilization of the Fleet. In a large measure, the machinery, it will be seen, exists. Only the Lords of the Admiralty know how far it is tested periodically and kept efficient. They can prepare for war at Whitehall without hurting any one's feelings.

The "Thinking Bureau."

Earl Selborne in 1901 made a most detailed reply to the criticisms that have been levelled at his department in reference to its preparedness for war. Not the least important point was his reference to the "Thinking Bureau," since it has been loudly claimed that alone among the world's naval administrations we have no group of officers whose duty it is to use their brains. Said the First Lord—

> "The Department of Naval Intelligence has no administrative duties at all, its only duty is to think; and that department consists of the Director of Naval Intelligence, a senior captain or admiral; under him are three captains, five commanders, five Marine officers, and eight civil clerks. This well-manned department, and any development that that department require, I shall support."

This is a Ministerial statement of the most far-reaching importance. What the nation requires is more groups of men with brains to think—they ought to be in every Government department. For every thousand men who can labour with their hands or follow along a path hedged in with precedents, there is probably not

one who can think for himself and others, wisely and cautiously, and glance ahead with the eye of a prophet.

In spite of official assurances to the contrary, the Naval Intelligence Department is still under-manned in comparison with its range of duties, and its knowledge of what is occurring abroad is inadequate, because the machinery for ensuring the requisite "stream of facts" needs expansion. An additional naval *attaché* has been appointed this year, but the number of these officers watching foreign naval developments is only five, whereas the Army possesses twelve *attachés*, more than twice as many. It is significant that the German Navy, small as it is at present, has a better manned Intelligence Department than the greatest naval Power in the world.

Policy of progress.

The exaggerated agitation of the summer of 1901 with reference to the condition of the Navy served an unexpected purpose; it gave the Admiralty an opportunity of making a declaration of their policy. Lord Selborne and his colleagues pleaded that they intended to continue strengthening the squadrons in near and distant seas in accordance with a policy that has been in operation for ten years past, and they have been doing so: such fleet equipments as armour-piercing shells, telescope-sights, and gyroscopes, are being issued to the squadrons; types of colliers and distilling-ships were being tested in the manœuvres to enable the authorities to decide the problems which the employment of such vessels suggest, and the solution of which will affect the design; the number of cruisers in the Cruiser

Squadron had been increased; the proposal to follow the American example, by establishing a school of naval strategy for officers, had been adopted, and this establishment is already at work; some scheme will be introduced to revive the Naval Volunteer force under new conditions of service. It is true that in last year's discussions no answer was made to the charge that "the Admiralty method of training seamen in gunnery is to train them ashore," a system which, it is alleged, is leading to the ailment of sea-sickness becoming "far too common." Possibly the reason why neither Lord Selborne nor Mr. Arnold-Forster condescended to reply to this criticism is that they trust that the knowledge of the public is not as slight as that of some naval critics. For ten years the men and officers of the Navy at Portsmouth have learnt the theoretical part of their gunnery at Whale Island, going afloat to fire. Last year two important changes were made. Seamen, except under special circumstances, will not return to the shore establishments to re-qualify, but will do so at sea; and in place of gunboats cruisers are used for practice. It will be seen, therefore, that (owing to quite another cause than that suggested) the Admiralty are decreasing the shore training. In passing, did not Nelson suffer from the distressing malady every time he went afloat?

A plan of campaign.

Is there a plan of campaign? For years past the question has been repeatedly asked. This is a matter of the gravest moment, and it will be well to indicate,

so far as can be known, the organization that lies behind the machinery which has been sketched above. As has been stated, all action emanates from Whitehall. This may be considered a source of weakness in so far as it may discourage initiative, and steps have been taken to furnish the admirals at the ports and in command of squadrons with increased authority. According to evidence laid before the Hartington Commission, during the first week in every month (or more frequently, if necessary) the Director of Naval Intelligence, who is always an admiral, meets the naval members of the Board and the Permanent Secretary, and reports to them the progress that has been made by the Intelligence Department since the last meeting, and the work he proposes to take in hand during the ensuing month. He also presents a schedule indicating the subjects dealt with in the Department since the last meeting to enable the members of the Board to be aware of the existence of such papers and to obtain the papers if required. He also at these meetings draws the attention of the Board to all existing deficiencies in the *personnel* and *matériel* which may affect the prompt mobilization of the Fleet.

On the same occasion a digest was submitted of the duties of the Director of Naval Intelligence, in which it was stated that—

"The essence of his duties is 'preparation for war,' which necessarily comprises the collection, sifting, and recording of all information relating to maritime matters likely to be of use in war, and the preparation and

correction to date of a complete plan for mobilizing the naval forces of the Empire.

"Also, *when directed* he is to prepare plans of naval campaign for the consideration of the Board, and is to bring to the notice of the Board all points affecting 'preparation for war.'"

Nothing could be more specific and business-like than these instructions, which leave to this important department a considerable field for initiative, though it has no right of action, and can merely make recommendations to the Board. The Director of Naval Intelligence and his colleagues act generally under the supervision of the First Naval Lord, and more particularly under the Second and Third Naval Lords with reference to the mobilization of the *personnel* and *matériel* respectively.

A plan of campaign does exist at Whitehall ready for use when occasion requires. In 1888 Lord Hood of Avalon stated: "A plan of warlike operations has been prepared by the Naval Lords in conjunction with the First Lord." On a more recent occasion we have had the assurances of Lord Spencer and Viscount Goschen that when they were at the head of the Naval Administration, such a scheme with reference to the disposition of the naval forces of the Empire existed, and we cannot do wrong in assuming that in face of popular uneasiness and Lord Charles Beresford's vigorous impersonation of the *rôle* of naval watchdog, Lord Selborne will see that the plan of campaign is kept up to date.

But it may be urged again—Is the Navy ready for war? Lord George Hamilton explained to the Committee of the House of Commons, in 1888, that "there is no such thing as a Navy on a peace footing." Continuing, he pointed out— Peace and war.

"Every ship that is commissioned is ready for war. The work which would have to be done in time of war is a mere duplication or increase of the work which has to be done in time of peace, and that is the essential difference between naval and military mobilization. Therefore what war organization means is increasing the machinery which you use in time of peace so as to make it capable of expansion when an emergency arises; and as each Naval Lord has assigned to him, during peace, duties connected with supplying the wants of the Fleet, so in war time would each Naval Lord be responsible for seeing that his department was capable of responding to the demands made upon it."

This is the ideal to which, if slowly, the Admiralty have been approaching of late years; certainly Whitehall was very far from approaching this ideal fourteen years ago. These official statements and other evidence which Lord George Hamilton quoted, and which have been confirmed since, indicate that the machinery at Whitehall exists, that there is provision for its continual revision to suit the changing demands of the time. From the First Lord authority and supervision devolves on the naval officers who compose the Board, and they in their turn superintend the work of the various departments, which stand at the head of all

the activities of the Fleet. All Government departments are conservative, bound more or less by red tape, and especially by the Treasury, but nevertheless no one can study the details of naval administration and be acquainted with the present condition of the Fleet without a feeling that at Whitehall the energies of the officials are increasingly turned to the serious task of fitting the Fleet for the serious business of defending the Empire. The weakness of the organization is that the Lords of the Admiralty are too burdened with detail, and have too little time for initiating reforms and for studying the large problems of war. As far as possible, the senior members of the Board should give their time to high policy, and devote as little attention as possible to the cut of uniform, the hirsute adornments of men, the arrangement of gold-lace, and the colour of socks—all subjects of comparatively recent discussion and action. The First Sea Lord should be freed from all detail, and give his thought to the problems, strategical and tactical, of defence, and to the best methods of organization, professional education and preparation, leaving details to his colleagues.

Coaling.

In one most important particular the war-training of the British Fleet exceeds beyond comparison that of any force in the world—the coaling of ships. Very wisely, this has been recognized as an evolution in all the British squadrons, and it is astonishing with what rapidity, by the co-operation of officers as well as men, the bunkers of ships, big and small, are filled. The

operation has been systematized in a manner which has been attempted in no other fleet. The coal depôts are now in charge of special officers, who organize the resources with the greatest care, and in the Channel and the Mediterranean Squadrons in particular this evolution is frequently practised, and the Admiralty receive long and detailed reports on every occasion. It is wise that emulation between ships in coaling should be encouraged. When war occurs, the quickness with which vessels are able to fill their bunkers and get away to sea again may have a most vital influence on the course of events. The presence or absence of a battleship or armoured cruiser on the day of battle may turn the scale towards victory or defeat. About a year ago a new organization at the naval ports was inaugurated, and it may be of interest to quote from the *Naval and Military Record* the following account of the coaling of the Channel Squadron ships at Portsmouth in the spring of 1901:—

"The five battleships constituting the Portsmouth division of the Channel Squadron have completed coaling for the first time since a commander, with a chief boatswain as his assistant, has been placed in control of the depôt, and the results are somewhat remarkable. It has been clearly demonstrated that, in the winter, any ship demanding anything up to 1500 tons, or even more, can be supplied during one day's daylight. To effect this, three cranes were kept at work on the shore side, and on the water side were two Temperley vessels, with two transporters in each. The question, therefore, arose

whether the crew could stow the coal as rapidly as it could be shipped. It was further determined to give, as far as possible, each ship the same chance, but this condition could not be fully observed; for while four vessels coaled in daylight, the *Prince George* had three hours of artificial light—namely, from 5.30 to 8.30 p.m. In each case, however, every detail of the operation was carried out by the ships' companies, the only outside assistance being rendered by the dockyardsmen, who worked the winches on shore. The work, even to bringing the lighters alongside, and the running of the coal to the cranes, was performed entirely by the crews. So keen was the competition that not only lieutenants, but chaplains, surgeons, and paymasters wheeled their loads with the energy and rapidity of trained stokers. The following table gives the return for each ship:—

	Tons shipped.	Average per hour.
Hannibal	943	... 170
Prince George	1220	... 187·7
Resolution	1215	... 169·5
Majestic	1230	... 200·3
Mars	1070	... 208·78

"About an hour before coaling ceased, the *Mars* had averaged 218 tons an hour; but at this point the fuel accumulated on deck, the men below being unable to trim it as rapidly as it was sent down; and though this broke down her average, she for the present holds the record, so far as the Portsmouth division of the Channel Squadron is concerned. It should be mentioned that the competition was instituted without any advice or recommendation from the Admiralty, but in order that Commander Heathcote, who has relieved the dockyard staff officer of the responsibility, might obtain information for his guidance in the event of an emergency arising."

A Devonport record.

At Devonport and at Chatham the same measures have been taken in the past year or two to improve the coaling facilities, with the result that it is now possible for a British battleship with a smart crew to coal at the rate of 200 tons an hour, whereas the best speed attained in the German Navy, on one occasion and apparently under model conditions, was 182 tons, and this for one hour only. An illustration reflecting on the efficiency at Devonport may be quoted from the same journal. It indicates the spirit in which ships are filled up with fuel—a task requiring great care, and entailing much physical exhaustion. The incident occurred on January 29, 1902, when the battleship *Magnificent* was about to put to sea for a cruise with the Channel Squadron.

"The work commenced at 6.15 a.m. with the *Kharki*, Government collier, and a lighter on the starboard side, and the *Garnet* and a lighter on the port side. The following averages were made for the working hours up to time of finishing at 9 p.m.:—Starboard lighter, 15·36 tons; *Kharki*, 41·76 tons; port lighter, 15·41 tons; *Garnet*, 56·48 tons. The total amount of coal taken in was 1838 tons in 13¾ working hours, *i.e.* deducting a quarter of an hour for breakfast, half an hour for dinner, and a quarter of an hour for tea, from the total time of 14¾ hours. The average amount per hour for the working time was 133·6 tons, and the average for the whole time 124·6 tons, which is the largest average yet recorded at Devonport. From 11 a.m. to noon 200 tons were taken in. A much better average would have been made if the coal could have been stowed in the bunkers as it was

taken in. On several occasions stoppages occurred for a quarter of an hour or twenty minutes; the bags could not be emptied, and consequently the men in the holds were waiting for bags to fill. With another twenty stokers to trim, and another fifty men with barrows, a record could easily have been made of 150 to 200 tons an hour.

"Both the Commander-in-Chief and the Admiral-Superintendent were hourly informed of the progress of the coaling, and when the *Magnificent* reported the result at 9 p.m., the Commander-in-Chief signalled: 'Very good; that is the best record we have here.' The Admiral-Superintendent and Rear-Admiral Sir W. A. Dyke Acland signalled: 'We consider the coaling most creditable.' On the completion of the coaling, the Executive Officer of the *Magnificent* (Commander W. R. Hall) complimented the men on the manner in which they had worked, and ordered a pint of beer to be issued to each man who had taken part in the operation."

Experiments at sea.

Much attention has been devoted to the testing of machinery which will enable ships to coal while still under way. This is one of the newest developments suggested by the invention of an American, Mr. Miller, and judging by the latest trials it will give good results. At the end of February last, during the cruise of the Reserve Squadron, the apparatus was put to two most practical tests. In the first instance, the battleship *Trafalgar* was rigged up with the necessary gear. The man-of-war steamed at ten knots an hour, and was able to take on board from the collier *Muriel*, which she towed, as much as 35 tons an hour. On a

later occasion the battleship *Empress of India* experimented while travelling at from ten to eleven knots. The gear took the strain caused by the action of the sea and the continual altering of course so admirably that not a strand of the towing hawser was broken. In 33 minutes 21 tons of fuel were taken on board, giving a rate of 40 tons an hour, although there was a moderate sea and some wind. The results that have been attained are in every way satisfactory, and there is no doubt that with practice the record will be still further increased. In none of the other navies is the same importance attached to this important evolution of coaling ships. This counts to the war-efficiency of the British Fleet.

Fleet auxiliaries.

Consideration has been directed since the naval wars in the Far East and West to the provision of auxiliaries, and the agitation has had a salutary result, in that it has spurred the Admiralty to action on lines that on consideration must appear wise. The provision of auxiliary ships is a matter that must receive most careful consideration. Mobility in the highest degree is the passport to victory, and nothing must be done to hinder the movements of the fighting force. To tack on to a fleet, as has been suggested, ships as laundries, as meat-stores, as colliers, as hospitals, as repairing-shops, as "mothers" for the destroyers and other vessels for use as telegraph-ships without the most deliberate thought as to the effect of their presence in hampering the admiral commanding, would be madness. It was stated in evidence at the inquiry into the

charges against Admiral Schley that in the Hispano-American War this officer was hindered to a dangerous extent by the lack of speed in a collier and the machinery defects which were developed. Some of the auxiliaries named are most desirable. Some of them can be provided on the outbreak of hostilities, such as supplementary hospital ships, and other ships necessary for the due supply of stores to any squadron which may be operating at a distance from any base.

It is otherwise with vessels for the supply of coal at sea, which require special machinery, and with ships as centres for the carrying out of repairs that do not necessitate a return to the dockyard. These must be ready as soon as war occurs, and we have every assurance that these essential auxiliaries are now being acquired, though it is unlikely that the Admiralty, since in these respects they are acting in advance of European opinion, will take any special pains to publish their virue of forethought to the world. We do not wish to be copied.

Attitude of the Admiralty.

In his statement explanatory of the Naval Estimates of 1902–3 the First Lord remarked:—

"It is often assumed in argument that there is no doubt as to the number of auxiliary vessels that will be required in war, or as to the exact type they should be, or as to the use to which they could be put. As a matter of fact, this is not so, except in so far that the Board have fixed exactly the number of auxiliary vessels that, according to their present experience, would be required in time

of war. In all organizations there are two classes of instruments which will be required in time of war—the class which cannot be improvised, and which must be fully created in time of peace, and the class which can be improvised speedily on the outbreak of war if proper preparation has been made in time of peace. This is true of auxiliary vessels. Certain auxiliary vessels can, if every preparation has been made beforehand, be taken up from the mercantile marine immediately on the outbreak of war. There are others which must be created in time of peace. Although hospital ships belong to the former class, they may be very useful also in time of peace with large fleets, as has been exemplified in the case of the *Maine* (the generous gift of Mr. Baker, a citizen of the United States), which is now serving in the Mediterranean. As regards the latter class, we and all other nations are still in the experimental stage.

"As I said last year, in the case of colliers the policy of the Board has been, by continual chartering, to induce private owners to build as many vessels as possible which are thoroughly suited for the needs of the Fleet. I will take another case as an example, depôt ships for destroyers. A different class of ship is required, according as the destroyers are or are not acting from a fixed base—opinions differ also in the latter case as to the exact use to which these vessels can be put. One class of depôt ship is being prepared for the flotillas at the Home ports, and the *Leander* is being prepared as a depôt ship for the destroyers in the Mediterranean. From this experience we shall learn more clearly what is exactly required; but if the new *Scout* class is a success, these depôt ships should not be wanted for them to the same extent. Again, in the case of distilling-ships one has been bought and fitted which should be on service within the year, and experiments

have been made with others; but obviously it will be far better if by improvements in the boilers ships are able to distil their own water, and can be made independent of auxiliary distilling-vessels."

Recent improvements.

At the same time the Admiralty can point to arrangements whereby four hospital ships (for which fittings and stores are ready) will be despatched to the squadrons on the first whisper of war, to improved facilities at the naval ports for coaling ships, to additions which have been made to the coaling-craft, to the vast increase in the reserves of fuel at all the principal bases, at home and abroad, while they can also claim credit for the admirable arrangements—set out in a confidential document supplied to each admiral commanding—which have been made for the distribution of coal in time of war, arrangements that cost the country little, but promise to give excellent results. In this respect the Fleet has never been so favourably situated as to-day. The Admiralty arrangements are unrivalled in the navies of the world, and they are being further improved. A number of strategic railways to connect existing lines, so as to enable coal from Wales to be poured into the naval depôts in time of war, are to be laid, while, as has been stated, progress has been made with experiments with a view to facilitating the coaling of ships while under way, a matter of the greatest importance, since fuel is to modern ships what wind was to those of fifty years ago.

A claim has been made that the Fleet must be accompanied by telegraph-ships, able to pick up and

tap cables. The assurance may be accepted that this matter has not been overlooked. The submarine cables of the world are British for the most part, and when hostilities occur the Admiralty will have an ample supply of telegraph-ships to press into the Imperial service, vessels which are now carrying out their peaceful duties, but will be available when the call comes. In the House of Commons on July 5, 1901, Lord Selborne, after revealing to critics more possibly than was wise of the action of the Admiralty on this important matter, added that, "store-ships, telegraph-ships and other auxiliaries have been provided for, and will be sent to the different squadrons in time of war." Wisdom approves such provision, rather than the locking up of hundreds of skilled men in such vessels in peace time, divorcing them from the war duties which officers and men must practise in time of peace if they would win in war.

Training officers and men.

This brings us to the next consideration. Are officers and men rendered fit for the exacting duties of battle? The question raises the whole problem of the methods of training the *personnel* of the Fleet around which controversy has raged for some time past. There are faults in the system, as there are in all human organizations, but the net results, as shown by the body of officers and men afloat to-day, are good. Allied with the scientific attainments that are essential to those who handle the complicated war-machines of to-day, we see repeatedly evidences that the old spirit of the past has not died, and that officers and men are still of

the same stock as those who so materially assisted to build up the Empire.

Gunnery.

Within the past few years, largely as the result of the action of half a dozen officers backed up by public opinion, the Admiralty have inaugurated a change which has added, and is adding immeasurably, to the fighting-power of every ship flying the White Ensign. "If I were asked by any admiral or captain," said Lord Selborne in the House of Lords, "what in my opinion is the highest duty in the training of seamen nowadays, I would say 'Gunnery, gunnery, gunnery.'" For historical support he could have pointed to the American War of the early years of the last century, and the disastrous results of want of practice. Many captains never put shot into the guns until the enemy appeared; they employed the leisure time of the men in handling the sails and decorating the ships. The number of shots to be fired in the first six months after the guns were put on board any man-of-war was strictly limited by the Admiralty. Refering to the *Peacock*, sunk by the United States *Hornet*, President Roosevelt * states that, "she had long been known as 'The Yacht,'" on account of the tasteful arrangement of her deck. The breechings of the carronades were lined with white canvas, and nothing could exceed in brilliancy the polish upon the traversing-bars and elevating-screws. There are some "yachts" in the British Navy to-day, unfortunately. Mr. Roosevelt, with experience of naval affairs gained in the United States Navy Department,

* "The Royal Navy: a History."

points a moral that the "spit and polish" school ignore:—

"Of course," he says, "a slovenly ship does not often make a good fight, for slovenliness is an indication of laziness, carelessness, and inefficiency; but man—and, above all, fighting man—shall not live by neatness alone, nor yet merely by precision in the performance of duties not connected with the actual shock of arms."

Not one or two, but many officers at the beginning of the nineteenth century, as do some to-day, "made the common mistake of confounding the incidents and the essentials of discipline." There were some exceptions in the American War, and His Majesty's ship *Shannon*, commanded by Captain (afterwards Rear-Admiral Sir) Philip B. Vere Broke, was one. Allied with zeal for the service, this officer had a just appreciation of the importance, the immense importance, of good shooting. It is said that for three hours a day the crew were drilled at guns, muskets, pikes, and broadswords, and especially at the guns. Twice a week they fired at targets, and Captain Broke, as an additional stimulus beyond the emulation excited, gave a pound of tobacco to every man who put a shot through the bull's-eye. Frequently he would have a cask thrown overboard, and suddenly order some one gun to be manned to sink it. But captains of this type were rare, and for the most part the gunnery of the ships was absurdly, contemptibly inefficient. To-day we need more captains like Admiral Broke.

Captain Scott's example.

For some time the Lords of the Admiralty have devoted increased attention to the gunnery of the Navy, and this growing alertness is a good omen for the future of the Fleet. Less than five years ago gunnery was sadly neglected, and smartness, mere "spit and polish," was exacted in many, if not most, ships. The result was that the shooting of the gunners of many vessels was far from creditable. Captain Percy Scott has set an example that has produced most salutary results. While commanding successively the *Scylla* and *Terrible* he showed the accuracy that could be obtained from the splendid weapons supplied to British men-of-war, and as recently as December last he received a message of encouragement and congratulation from the Admiralty, which it is hoped will give rise to emulation of the most healthy description in all the squadrons. On two successive occasions the *Terrible* has beaten all gunnery records, and that these splendid results have been obtained without in any way neglecting the general efficiency and cleanliness of the ship is indicated by the report of Rear-Admiral Harry Grenfell, second in command of the China Squadron, after his last official inspection. It indicates the interest officers and men take in performing their duties under a "keen" commanding officer:

> "The ship is very clean and well kept. The ship's company are a well-grown lot, and do their work silently, intelligently, and well.
>
> "For the last two years the *Terrible's* heavy-gun prize-firing for all natures of guns has been by far the best of any ship in the service.

"From the results noted in Torpedo Log, Whitehead practice is satisfactory.

"The engine-room department is clean and efficient.

"The appearance of the Marine detachment was very creditable."

On the last occasion of prize-firing the *Terrible's* six-inch guns fired 128 rounds, and made no fewer than 102 hits. The service prize-firing target was used, the distance 1400 to 1600 yards, the speed of the ship twelve knots, and the weather fine, with a moderate swell. Each gun fired at the target for two minutes, the hits were then counted by independent umpires from other ships. As it was anticipated that the firing would be more rapid than is usual with 6-inch guns, extra independent umpires were taken out to carefully verify the time for each gun, and as an additional precaution an attempt was made to photograph the target after each gun had fired. In 1900 this ship headed the list of the Fleet with a percentage of hits 76·8, and an average of hits per gun per minute of 3·33. The following table, which was published in the *Army and Navy Gazette*, gives the prize-firing of seven ships similarly armed (twelve 6-inch quick-firing guns) in 1900 :—

Ship.	Number of rounds fired.	Number of hits.	Percentage of hits to rounds fired.	Average hits per minute.
Terrible ...	104	80	76·8	3·33
Majestic ...	108	52	48·1	2·17
Prince George ...	93	52	55·9	2·17
Jupiter	106	44	41·5	1·83
Magnificent ...	87	30	34·5	1·25
Mars	95	27	28·4	1·13
Hannibal ...	79	27	34·2	1·13
Terrible (1901)	128	102	79·6	4·25

"Last year," this journal remarks, "it will be seen that the *Magnificent*, *Mars*, and *Hannibal*, with their 36 guns, made a total of 84 hits, while the *Terrible*, with 12 guns, made 80 hits, four short of their total. This looks as if the *Terrible* was as good as three battleships. It has, however, been argued by some that, although the three battleships missed the target 180 times, they missed it by so little that they would have hit a battleship. That may be, but a battleship's target is not always a battleship. The prize-firing target's canvas is 20 feet and 18 feet high (360 square feet in area), and it is surprising that three battleships should miss such a large target 180 times out of 260 shots at the comparatively short range of 1400 to 1600 yards. How often, it may be asked, would they have hit a fast-approaching destroyer?"

Some later figures are also instructive. The following is a summary of the annual prize-firing with heavy guns of the Channel Squadron ships in 1901.

In the case of the 13·5-inch guns two runs of six minutes for each gun were made, but for the 12-inch guns one run of six minutes was made for each gun. The results were as follows:—

BIG GUNS.

Ship.	Calibre of gun.	Number of guns.	Number of rounds.	Number of hits.	Percentage of hits to rounds fired.	Average hits each minute.	
	inch.					1901	1900
Repulse	13·5	4	25	10	40	0·2	0·17
Resolution ...	13·5	4	28	9	32	0·18	0·17
Mars	12	4	26	11	42	0·46	0·25
Majestic... ...	12	4	22	7	31	0·29	0·13
Magnificent ...	12	4	23	7	30	0·29	0·08
Prince George ...	12	4	26	7	27	0·29	0·29
Hannibal ...	12	4	22	6	27	0·25	0·21
Jupiter	12	4	20	6	30	0·25	0·17

In the case of the 6-inch guns one run of two minutes was made, the results being:—

SECONDARY-CALIBRE GUNS.

Ship.	Calibre of gun.	Number of guns.	Number of rounds.	Number of hits.	Percentage of hits to rounds fired.	Average hits each minute.	
	inch.					1901	1900
Mars	6	12	112	62	55	2·58	1·13
Majestic... ...	6	12	123	52	52	2·16	2·17
Repulse	6	10	77	39	50	1·95	1·35
Jupiter	6	12	97	42	43	1·77	1·83
Resolution ...	6	10	61	31	51	1·55	1·83
Hannibal ...	6	12	84	35	42	1·46	1·13
Prince George ...	6	12	96	34	35	1·41	2·17
Furious	4·7	6	73	26	35	—	—
Arrogant ...	4·7	6	63	19	30	—	—
Minerva... ...	4·7	6	68	28	41	—	—
Pactolus... ...	4	8	95	20	21	—	—

From the 80 6-inch guns mentioned in the above 1901 return, 650 rounds were fired for 295 hits.

From the 92 6-inch guns in the fleet that participated in 1900, 713 rounds were fired for 290 hits, as against 193 hits for 733 rounds fired in 1899.

These figures may be contrasted with some examples from the latest returns (1901) from the China Squadron, which has become distinguished for the improvement which has taken place in the big and secondary gun firing:—

Ship.	Number of guns.	Calibre of guns.	Rounds fired.	Hits.	Percentage of hits to rounds fired.	Hits each minute.
		inch.				
Ocean	4	12	26	15	57·9	0·6
Barfleur	2	10	47	23	49·0	0·9
Terrible	2	9·2	22	14	63·6	1·16
,, ...	12	6	128	102	80·0	4·25
Astræa	2	6	21	14	66·6	3·5
,, ...	8	4·7	136	48	35·3	3·0
Barfleur	10	4·7	159	114	71·7	5·7

The figures for the Channel Squadron indicate the measure of improvement which has taken place on several ships, while those from the China Squadron reveal what the British naval gunner can do. One of the crew of the *Terrible*, Petty Officer Grounds, has made a record, with eight hits per minute, in eight rounds, from a 6-inch gun. The reward of this man and his companions of the gun's crew would not do more than give each of them a good dinner.

These latest returns from the China station show what can be done under service conditions with the splendid weapons mounted in His Majesty's ships. The figures serve as a standard, possibly not as high a standard as will be reached, but a sufficient indication for the moment of what can be done. We now know that—

A 12-inch gun, firing a 850 lb. projectile, can hit the target 3·0 times every 5 minutes.
A 10-inch gun, firing a 500 lb. projectile, can hit the target 4·5 times every 5 minutes.
A 9·2-inch gun, firing a 380 lb. projectile, can hit the target 5·8 times every 5 minutes.
A 6-inch gun, firing a 100 lb. projectile, can hit the target 21·25 times every 5 minutes.
A 4·7-inch gun, firing a 45 lb. projectile, can hit the target 28·5 times every 5 minutes.

This is an excellent standard from which to measure the figures in the Channel Squadron's return, and they mark a new epoch in the gunnery of the Fleet. It must be added that to some extent the results of the prize-firing may be affected by the weather, and this is the reason given by the Admiralty for refusing to publish the gunnery returns of the Navy.

Straight shooting and promotion.

Commenting on Admiral Sir Edward Seymour's decision, on relinquishing the command of the China Squadron (of which the *Terrible* was a unit), to present trophies for gunnery, the *Army and Navy Gazette* remarked: "Rapidity of fire must (or should) conduce to more hits, as there is less time for the distance to change between the rounds. It is, therefore, most important to encourage it, and comparisons between ships should be on hits per minute, not upon percentage of hits to rounds fired. The challenge trophies presented by Admiral Sir Edward Seymour to his squadron for the best shooting with heavy guns and small arms shows that he has a full appreciation of the value which should be attached to good shooting, and the competition for them will probably tend to raise the standard of shooting with both weapons. In all functions on shore, where representatives from different ships are present, it has always been the custom for the flagship to take the right of the line, but, according to Sir Edward Seymour's memorandum, in future the ship holding his cup for rifle-shooting will take the right of the line. These are all indications of a greater interest being taken in both heavy-gun and rifle shooting than heretofore (and not before it is wanted); but it is not only the officers who must take an interest, the Admiralty must give encouragement, as we have already suggested, by letting officers know that polishing brasswork is no longer to be the sure and only path to promotion."

This expression of opinion from an organ which

is not given to hostile criticism of the authorities deserves to be noted, as civilians usually fail to understand that smartness in what may be termed housemaid's work has been in the past one of the passports to promotion. It is well known to every one with any knowledge of the naval service, that practically every commander who desires promotion has either to buy paint and cleaning material, or obtain it from the dockyards surreptitiously. Some officers dip deeply into their pockets in order that they may supplement the Admiralty allowances of paint and other commodities. This worship of "spit and polish" should be abandoned once and for all, and efficiency in its broadest sense be the qualification for promotion.

More ammunition.

The Admiralty economize in ammunition in a manner which gives many officers an impression that they attach little importance to gunnery. In the *Warrant Officer's Journal*, one of the "rankers," who knows the weakness of the present state of affairs, has expressed a view which is held throughout the Fleet by all who have a right appreciation of the function of the Navy: "Is it not ridiculous," asks this paper, which is conducted by a naval editor for naval men of his own rank, "to spend millions of pounds in producing such splendid ships as our squadrons are composed of, and then wickedly economize a few thousands in withholding sufficient practice-ammunition from our captains of guns, of turrets, and of barbettes to help them in such training as will enable them to efficiently use the splendid weapons with which our

ships are armed, to send the enemy's millions to the bottom before he can send ours? To our mind the whole thing smacks of a suicidal tendency. We get back to the bed-rock that ships are meant to fight, . . . and straight shooting is the real point. . . .. Every nerve should be strained towards this end by the men who work on deck."

Encouraging signs.

There are several signs that the Admiralty are awakening to a due appreciation of the all-importance of gunnery. New regulations for prize-firing have been issued, Lord Selborne has spoken out strongly, the Lords Commissioners have written on recent occasions words of appreciation on receiving reports of good gunnery performances, and Captain Scott's "electric dotter" has been introduced into the service; but, unfortunately, it is going into the navies of other Powers also. Though the splendid shooting by the guns' crews of ships he has commanded has been assisted by this ingenious contrivance, the real secret lies in his own personal devotion to his work, which has been the "hobby" of a lifetime, and the support he has received from his officers. Nevertheless, the "dotter" has assisted. This consists of an electrical contrivance whereby, however much the ship may be rolling, the gunner is enabled to keep his eye on the object at which he is aiming. Without such assistance he must wait until the vessel's motion brings the target back on the line of the sights. With Captain Scott's invention he keeps on firing. It can be prophesied that, by the use of the "dotter" and steady attention

by officers and men, the fighting power of the British Fleet can be easily doubled, and over 60, instead of 30 per cent. of hits be made the average of big-gun hits for the whole of the British Navy. Thus, without adding a ship to the effective list, the power to sink an enemy may be increased twofold.

Prizes for naval gunners.

It is a regrettable fact that while cups, shields, and large prizes are given annually to Volunteers who are crack shots with the rifle, no one ashore has shown sufficient interest in the practice made with weapons upon which the stability of the Empire depends to institute any rewards for naval gunners. The Admiralty distribute small sums of money, but there are no rewards in the whole Fleet such as are offered at Bisley and at the Army Rifle Association meetings. Admiral Sir E. H. Seymour has set an example in this respect that it is hoped may be followed by other officers; in fact, a shield has this year been provided for competition by the men-of-war in the Mediterranean. But are there no public-spirited persons ashore who will do something to encourage the men behind the guns, and show them that in the opinion of civilians straight shooting with 850 and 100 lb. shells is regarded as at least of equal importance to the use of a Martini-Henry rifle? The patriotic aspiration of the men of Kent to collect sufficient funds to present a trophy to the new cruiser bearing the name of the county is admirable, since this piece of plate is intended to bear the names of the best gunners from year to year, thus encouraging the men to do their very best. Surely other counties

will not fail to follow so admirable an example! Sixteen cruisers named after various counties are being built, so there is no lack of opportunity if the hearts to loosen the purse-strings are in sympathy with the greatest of all Imperial causes—the straight shooting of the Fleet. It remains for the Lords of the Admiralty, by their promotion of officers, which is by selection to the rank of captain, to indicate that those who take trouble with the instruction of their men, and possess the other necessary qualifications, are certain of advancement. Without adding a single ship to the Fleet, it may be doubled in offensive strength. This is a fact which has been proved by Captain Percy Scott, and it deserves to be continually borne in mind. The public are too apt to count the number of ships possessed by each nation, and leave out of the calculation the *personnel* equation, which is after all as important, if not more so.

Not a land-tied Fleet.

A criticism of a recent date has led to an impression that the Fleet is spending more than a proper proportion of time in harbour, and that officers and men are for long periods divorced from their proper environment —the sea. The fact is, of course, that, in order to study, and this is absolutely essential, both officers and men must be ashore at one of the gunnery or torpedo schools, or at Greenwich College, while it follows that after a sailor has been for three to three and a half years on a foreign station, he looks, and has a right to look, for a period of service in the home country to enable him to be among his friends. As

a matter of fact, so great is the demand for officers and men in sea-going ships that it is with the greatest difficulty that the Admiralty are able to keep faith with those under them in the matter of leave, a statement which any one in the Navy will confirm. The truth is, as has been already stated earlier in this chapter, that there are no ships in the world which are so much at sea as those of the British Fleet. One-third of the year, on the average, is spent by most vessels cruising. Consequently, whatever defects there may be in the training of officers and men, they do not fail to have ample time at sea, and day after day they are engaged in drilling, so as to become proficient in all the duties on the quick and unerring performance of which victory will depend. According to the latest return there were 53,818 officers and men in what may be termed strictly sea-going ships, while 5702 were in the Reserve Squadron, which goes to sea for a fortnight's cruise every quarter, giving a total of nearly 60,000 in ships in which experience of actual sea conditions is obtained. In other words, as might be expected, half the total naval force is on the high seas, while about 20,000 are in reserve, and the remainder comprise boys and coastguards who are frequently sent on cruises; 4500 officers and men at the training schools improving their warlike knowledge, and others who are either on shore or doing duty in stationary ships, the latter for the most part officers and men who have recently returned from foreign service.

Lord Selborne has revealed that he is for progressive thought and action at the Admiralty. He is determined to give the nation a naval force adequately prepared for emergencies. In his "annual statement" for 1902–3, the First Lord swept away some cherished anachronisms, and set forth in admirable fashion his hopes and intentions for the future:— Modern methods.

"I desire that there should be no ambiguity, and, therefore, state plainly that the Board do not consider exercise with masts and yards to be essential for the proper training of the officers or seamen of the Fleet, and that henceforth it is abandoned as a necessary part of their education after they have left the training-ships. The brigs are retained for the boys in connection with the training-ships, and the Cruiser is used in the Mediterranean as an adjunct to the training of the seamen, because practice in masts and yards is excellent both for mind and body. This no one doubts; the question is, is it an essential factor in the sea-training of a modern naval officer or seaman in order to make him the perfect instrument of warfare which he should be? It is that question which the Board answers in the negative, and the occasions on which, in their opinion, such training is permissible and valuable are those on which it does not displace any part of that training which is essential or conflicts with the exigencies of the service in the manning and commissioning of fighting-ships.

"If I am asked what is essential, I would reply all sea knowledge which is necessary for the management of modern vessels of war and their boats under all conditions, and gunnery and torpedo work in all its branches. Further, I believe that the training of the modern seaman should

more and more adapt itself to the peculiar characteristics of the ships he has to man. As oars gave place to sails, so sails have yielded to engines, and timber to metal. The training of the seaman should, therefore, be directed towards a knowledge of the structure and machinery of a modern man-of-war, and capacity and handiness to deal with and repair it. Gunnery, however, is the most important of all, and in gunnery the emulation between his Majesty's ships is becoming very keen. But our seamen and marine gunners must be able to shoot straight at long as well as at medium ranges; they must be able to hit their target with the guns trained in any direction in which they will bear; and, above all, they must never become fair-weather gunners. Emulation, therefore, must not be allowed to lead to a restricted selection of conditions and weather for target-practice."

If Lord Selborne will live up to his ideal, and receive the hearty co-operation of his colleagues, not much fault will be found with the training of the British seaman.

The war-readiness of the Fleet.

To summarize, it is contended that the organization for war exists, that, in the words of Lord Charles Beresford, the Navy is always on active service, always preparing for the arbitrament of war, that the machinery for mobilization is ready for use, and is periodically tested as far as circumstances allow, and that there has been a necessary, and it is to be hoped a radical, revival of interest in gunnery, for which little thanks, it is true, are due to the Admiralty; the suggestion came from outside Whitehall. The officers and men, to the number of 118,625 (April, 1902), show all

those admirable qualities that have in the past distinguished British seamen. There are flaws in the picture, serious deficiencies, that it behoves the Admiralty to remedy, but no good service is gained by laying on the blame so heavily that all the admirable work of reorganization of the past five years is hidden from view. The "war-readiness" of the Fleet is an actuality, though in many respects improvement, great improvement, is desirable, indeed urgently necessary.

Lessons from abroad.

By the establishment of the School of Strategy at Greenwich, the Admiralty have taken a step in the right direction, but it is still a flaw on our naval preparedness that the junior officers of the Fleet are not encouraged to study naval history and the problems which it suggests. Every obstacle is put in their way if they would take an intelligent interest in the progress of naval science as applied to war afloat. In the United States the Intelligence Department are continually issuing to the ships publications which reflect all that is being done by the naval departments of the world, and give details of the tactical problems studied on the occasion of manœuvres abroad. It is probably no exaggeration to say that the American officer has as clear an appreciation of the lessons learnt from the British manœuvres each summer as the officers of our own Fleet, probably he is better acquainted with them. The former are provided with a carefully prepared narrative, the latter are given absolutely no information. It should be the aim of the Admiralty to imitate the sensible system of

the Japanese, as described in another chapter. There every available officer is embarked, and he is encouraged to study all the problems that the course of events suggests. At present, in the British Navy, there is no such effort to get out of the operations the greatest possible benefit, and the result is that they are of the smallest educational advantage to the officers of the ships engaged. Every day, as the manœuvres proceed by means of memorandum or lecture (Admiral Sir Harry Rawson practised the latter method), the officers of every vessel should have placed before them a story of the manœuvres and of the objects to be attained. Every executive officer is a possible captain or admiral, and the sooner he becomes a serious student of all the problems of sea warfare, the better his ability to command when his turn comes to take his fleet or ship into action. It is a matter that must be kept continually to the fore.

More tactical manœuvres.

Lord Charles Beresford has called attention * to the present inadequate opportunities given to officers for the study of tactical problems—

"Strategical manœuvres are totally distinct from tactical manœuvres; the yearly manœuvres have been strategical manœuvres. Tactical manœuvres are manœuvres in which one fleet is handled against another fleet, with the object of each trying to get the position of advantage. Since I have been in the Royal Navy, forty-three years, there have only been tactical manœuvres of this description with battle fleets on two occasions—one when the Channel Squadron met the Mediterranean Fleet. Both manœuvres

* Letter to the press, March 16, 1902.

were carried out last year. The sixty-nine and forty-six hours of fleet manœuvres to which I referred (in a speech before the London Chamber of Commerce) as carried out in the Mediterranean during the last two years were neither strategical nor tactical manœuvres, but simply parade evolutions, the admiral leading the line and altering the order of the Fleet by signals. When I declared that I had only tactically handled a Fleet for five hours in my life, I referred to handling one fleet against another, the only way admirals can practise in peace what they will have to do in war. This was during the combined manœuvres of the Channel and Mediterranean Fleet off Lagos, August, 1901. No captain in the Navy has ever tactically handled a squadron of battleships against another, and only three of our admirals. The importance of training in tactics cannot be overrated, for on the ignorance or knowledge of our admirals in this branch of their profession the fate of the Empire will depend in the next war."

Undoubtedly the Fleet should carry out more frequent tactical manœuvres to enable officers to study the real problems of war, and it might very well happen that there would be less of the parade evolutions to which Lord Charles Beresford referred.

Advice from the American President.

President Roosevelt, in his admirable contribution to "The Royal Navy: a History," thus sums up his conclusions on the War of Independence :—

"Contempt," he says, "is the emotion of all others which a nation should be least willing to arouse; and contempt was aroused by the attitude of those Americans who refused to provide an adequate navy, and declined to put the country into a state which should render it fit for self-defence. There are plenty of philanthropists and

politicians in the America of to-day who show the same timid, short-sighted folly, and supine indifference to national honour; nor is the breed wholly lacking in England," he adds.

"The incidents which accompanied the capture of Washington," he writes in one place, "were discreditable to the British, but the capture itself was far more discreditable to the Americans."

We may rest assured that the American statesman, student as he has been of naval history, is right when he urges the importance of a nation being prepared for war.

"There is unquestionably a great difference in fighting capacity, as there is a great difference in intelligence, between certain races. But there are a number of races, each of which is intelligent, each of which has the fighting edge. Among these races the victory in any contest will go to the man or nation that has earned it by thorough preparation. This preparation was absolutely necessary in the day of sailing-ships; but the need of it is even greater now, if it be intended to get full benefit from the delicate and complicated mechanism of the formidable war-engines of the present day. The officers must spend many years, and the men not a few, in unwearied and intelligent training, before they are fit to do all that is possible with themselves and their weapons. Those who do this, whether they be Americans or British, Frenchmen, Germans, or Russians, will win the victory over those who do not. When the day of battle comes the difference of race will be found as nothing when compared with differences in thorough and practical training in advance."

This may well be the last word on the question of the "war-readiness" of the British Fleet.

THE NEW NAVY

FOURTEEN YEARS' NAVAL CONSTRUCTION

THE NEW NAVY.

Fourteen Years' Naval Construction.

Year.	Battleships.	Cruisers.				Sloops.	Torpedo-boat destroyers.	Torpedo gunboats.	Torpedo-boats.	Gunboats.	Submarines.
		Armoured	1st.	2nd.	3rd.						
Naval Defence Act, 1889–94	10	—	9	29	4	—	—	18	—	—	—
Additions, 1892–93 ...	1	—	—	—	—	—	—	—	10	—	—
„ 1893–94 ...	2	—	2	8	—	2	20	—	—	—	—
Totals for five years, 1889–93	13	—	11	32	4	2	20	18	10	—	—
1894–95	7	—	—	6	—	2	42	—	—	—	—
1895–96	—	—	4	4	2	—	—	—	—	—	—
1896–97	5	—	4	3	6	—	28	—	—	—	—
1897–98	4	—	—	—	3	2	2	—	—	4	—
Supplementary Programme, 1897 ...	—	4	—	—	—	—	4	—	—	—	—
1898–99	3	4	—	—	—	4	—	—	—	—	—
Supplementary Programme, 1898 ...	4	4	—	—	—	—	12	—	—	—	—
Totals for five years, 1894–98	23	12	8	13	11	8	88	—	—	4	—
1899–1900	2	2	—	1	—	2	—	—	2	—	—
1900–1901	2	6	—	1	—	2	5*	—	2	2	—
1901–1902	3	6	—	—	2	2	10	—	5	—	5
1902–1903	2	2	—	—	2	—	9 4†	—	4	—	4
Totals in four years, 1899–1902	9	16	—	2	4	6	24 4†	—	13	2	9
Totals for five years, 1898–1902	16	24	—	2	4	10	36	—	9	2	9
Totals for fourteen years, 1889–1902	45	28	19	47	19	16	132 4†	18	23	6	9
							366‡				

* Supplementary Estimate, 1900.

† Four "Scouts," sea-going torpedo-boat destroyers, were included in the programme 1902–1903.

‡ One second-class cruiser and two torpedo-boat destroyers have been lost.

CHAPTER X

DISORGANIZED SHIPBUILDING

ONE of the most serious questions for inquiry in connection with the Navy is the disorganization of the Royal dockyards, and the long period that is now devoted to the building of ships for the Fleet. The main cause of the "museum squadrons" that bear the White Ensign has been the creeping paralysis which has affected the Government yards, and private establishments in some degree, for several years past. The evil is increasing. There is no sign of a due appreciation of the disease, of the extravagance that the delays occasion, or of the danger to which the nation is exposed by the continuance in a skeleton state of vessels which should be afloat, ready to co-operate in the defence of British interests.

Portsmouth's decadence.

Portsmouth Dockyard, in particular, has fallen from its high estate; work drags on from month to month, and the delays seem to increase rather than the reverse. Owing to this state of affairs, the Admiralty had to withdraw from the yard the order for the new battleship *King Edward VII.*, and arrange for its construction at Devonport. Consequently, when the cruiser

Suffolk, laid down twelve months ago, has been launched this summer, there will not be a single ship under construction at this chief arsenal of the Empire. It is almost a year since the armoured cruiser *Kent* was sent afloat, and little progress has been made with her. Her armour-plates are in the yard, but they are not being fixed. She will probably be at least four years building. At a time when we urgently require belted cruisers in commission, such retardation is a most serious matter. The cruiser *Powerful*, which is refitting, has been in hand eighteen months. She has dawdled on from one year into another, and no one has cared. In the middle of March orders were received to complete her in hot haste. The men were set to work day and night, and this means high pay and waste. The authorities might seem to have given up all hope of completing the *Spartiate*, the new cruiser, or of sending the cruiser *Europa* to sea again, but they have hopes that the troubles in these cases are ending. The former ship was authorized by Parliament six years since, and has been actually under construction nearly five and a half years. She began her trials towards the end of 1900, and has since experienced a series of breakdowns, which have dragged on from month to month, without much effort being made to get the defects remedied. Surely even the Admiralty must be ashamed of this performance, which does not stand alone, since the little third-class cruiser, *Pandora*, now at last commissioned and in the Mediterranean, was over three and a half years completing.

An attempt is being made to finish the *London*, because this battleship is wanted for the Coronation Review, but it would be rash to prophesy when the *Vengeance* and the armoured cruiser *Good Hope* will be in commission. Work in other directions is also in arrears. Out of sixteen torpedo-boat destroyers in the Reserve, fourteen of them were so defective as to be unfit for service, if required at the middle of January.

An expert visitor, with forty years' dockyard and naval experience, writing of the state of affairs, recently stated—

A dockyard demoralized

"The whole dockyard seems to be demoralized; men are taken off one job and put on another, and much waste of time is the result. Unnecessary tasks are undertaken and essential work is neglected, and the yard has lost the reputation that it once boasted. At the other yards the work is being carried out with somewhat more expedition, but the progress is not as swift as it was a few years ago, when these Government establishments reached their highest efficiency, and battleships were ready for sea within two years of their keel-plates being laid down. Now from four to five years is the time occupied, as instance the *Albion*, *Glory*, *Vengeance*, and *Irresistible*. The *Vengeance* has already been in hand four years and seven months.

Turning to armoured cruisers, the Admiralty decided to begin laying down ships of this type in the summer of 1897. Four years and nine months have passed, and of the twenty-six ships of this important type, only one, the *Cressy*, is at sea; the *Aboukir*, *Sutlej*, and *Hogue*, the other three of the four vessels

ordered four years and nine months since, have been struggling to get through their trials; now official anticipations are entertained that all three may be in commission early in the new financial year (1902–3).

Official assurances.

It is impossible, in fact, to point to a single ship built for the Navy in the past three years which has not exceeded the time limit established under the Naval Defence Act, when the rapidity of our ship-building and its excellence was the admiration of the world. Unfortunately, though wise steps are being taken to modernize the plant at several dockyards, there is at present no sign of greater despatch in building. Addressing the House of Lords on July 6, 1901, Lord Selborne gave assurances that the following ships would be completed—

By the end of 1901 :—
- Four of the *Formidable* battleships.
- Two of the *Canopus* battleships.
- Three of the *Cressy* armoured cruisers.

By June 30th, 1902 :—
- Two of the *Formidable* battleships.
- Two of the *Cressy* armoured cruisers.
- Three of the *Drake* armoured cruisers.
- One *Monmouth* armoured cruiser.

This definite promise that eight battleships, and no fewer than nine armoured cruisers, in which the Fleet stands in such great need, would be placed in commission by the end of next June was received with gratification, as an indication that the authorities were going to force the work on expeditiously, and conquer

all obstacles to progress. Lord Selborne marked off the twelve months into two periods, and it is now possible to check his assurances as to the first period with the performance of his department. In January, 1902, only two of the six battleships had been completed; one of the *Canopus* class, the *Vengeance*, of the 1897 programme, had not completed for sea. Of the three *Cressys*, only one had been sent to sea. In fact, since Lord Selborne made his statement in July, only one of the additional vessels named by him had joined the Fleet by January 1st, for two of the ships in his statement were completed at the time he spoke—the battleship *Implacable*, and the cruiser *Cressy*. One ship instead of seven, as promised, is, unfortunately, the record of the first six months covered by the First Lord; and this experience, in conjunction with the reports of delays from the Royal dockyards, does not give ground for sanguine hopes that in the first half of the present year he will come much nearer realizing the anticipations in which he indulged.

Delayed men-of-war.

In the four years between March, 1896, and March, 1899, Parliament authorized eighteen battleships, and if the rate of building attained in the cases of the *Majestic* and *Magnificent* had been maintained, they would all have been flying the White Ensign this spring. What is the fact? Of the eighteen battleships only ten have been commissioned, including two completed in March, 1902, and the Fleet is the weaker by eight ships. Even if we allow nearly three years for actual construction, a year more than in the case of the *Majestic*

and of the *Magnificent*, the deficiency amounts to six first-class battleships, six millions sterling lying idle.

A glance at the progress which has been made with the armoured cruisers authorized in the two years 1897 and 1898 reveals no redeeming features. Over three and a half years have elapsed since the last of these twelve vessels was passed by Parliament, and at Christmas last one of them only was in commission. We were short of eleven of these eyes and ears of the battle squadrons and protectors of our commerce had war occurred. Since Christmas three others have been practically completed, after being over three and a half years building. We are, therefore, in arrears with eight armoured cruisers. The new British-built battleships for Chili are to be built in eighteen months, and Japan has obtained her cruisers in this country almost as quickly.

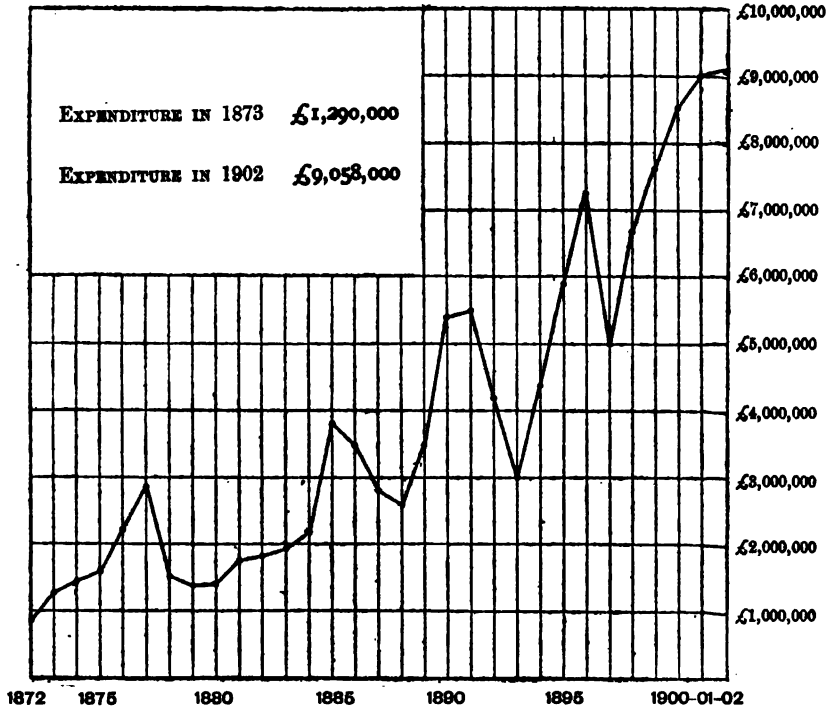
Wastefulness.

In the words of Lord George Hamilton, when he introduced the Naval Defence Act—

> "Rapidity of construction means economy, because delay occasions twofold waste—not only does a ship cost more in construction, but the longer it is on the stocks the less time is it alive as an effective ship, and therefore the less use you get out of it."

The veracity of this statement is self-evident, and its present application needs few words. Some vessels have been finished recently, but we are short of sixteen armoured ships if war were to occur, and that is a state of affairs that should not pass unnoticed.

THIRTY YEARS OF BRITISH NAVAL CONSTRUCTION VOTES.



ANNUAL EXPENDITURE IN THE CONSTRUCTION OF NEW SHIPS FOR THE BRITISH NAVY FROM 1872 TO 1902 INCLUSIVE.

Confusion at the dockyards.

The present heterogeneous character of our squadrons, particularly those in the Channel and the Mediterranean, is due in part to the delay in completing vessels, and in part to the past policy of the Admiralty in distributing their ships haphazard without special regard to homogeneity. Now matters have reached a serious pass.

Since Admiral Graham's committee reorganized the dockyards, these establishments have not approached the confusion that now exists. Within a few weeks there will not be a single ship on the slips at Portsmouth; in fact, the five Royal dockyards, with their 28,000 workmen, which were organized on a scheme whereby construction and repairs should proceed hand-in-hand, and regular employment be given to all the men, have been left with only one battleship, one first and two second class cruisers to build. The situation is most serious. Battleships take twice as long to build, and cost over twenty per cent. more than they did five or six years ago, and the explanation is that shipbuilding is disorganized. Slow construction is always dear construction. We are spending large sums on shipbuilding, but we are not getting the ships. Construction is becoming increasingly expensive, in consequence of the slow rate at which vessels are completed.

An inadequate programme.

It is evident that the Whitehall authorities have not much faith that matters will be much improved this year. At a time when France, Russia, and Germany in particular are building large additions

to their fleets, it is proposed to authorize only two battleships. Last year we decided to lay down three battleships. We did not do so, but they will be commenced this spring. What did other Powers accomplish in the same period? France actually laid down two battleships, and another was commenced in Russia, while Germany laid down a couple also at Kiel and Wilhelmshaven. Our programme consequently was two-fifths that of the Powers named, and our three ships were not actually begun. In the present year, when the designs are to be prepared for two ships for the British Fleet (they will not be commenced until next spring at the earliest), Germany is proposing to lay down yet another couple of battleships, and Russia and France will begin one each, and the two latter countries have projected eight more battleships altogether. The outlook is disquieting, since, on the admission of the First Lord, the eight battleships of the *Royal Sovereign* type, and the *Barfleur* and *Centurion*, ten battleships now in the Fleet, are under-armed, and must be withdrawn from service to undergo necessary reconstruction. Lord Selborne deprecates spasmodic construction, and advocates a steady policy, but this does not involve our regarding our building capacity as equal to only two battleships a year, the same as Germany. Two battleships a year will not maintain our supremacy in face of the present keen contest. It is barely sufficient to make good the depreciation of the ships in commission. To make good the older battleships as they become obsolescent it is necessary,

on the Admiralty's own figures, to lay down more than two a year, and then no provision would have been made for the necessary strengthening of the Fleet.

The present shipbuilding delays are discreditable to the dockyards, to the Admiralty, and to the nation, for foreigners draw broad inferences from statements they read in their papers, and these are accepted as reflecting on the industrial efficiency of the whole country. At present a contractor who undertakes to build for Japan or Chili or any other country, turns out a battleship complete, to the last knife and fork, in less than two years. If the work is for the Admiralty, he builds the ship, and then, before it is completely ready for sea, it is handed over to a dockyard. It is at once surveyed, and because some of the fittings are not to the taste of the dockyard official, he will frequently rip up hundreds of pounds' worth of material and waste as much labour. In this and similar unbusinesslike methods thousands of pounds are wasted. If Parliament has any regard for the efficiency of the dockyards, it will end the present ruinous system under which the Royal yards are supposed to finish off ships built by contract. It is a foolish waste of public money, causes necessary work to be neglected, and disorganizes establishments which were intended to be available for the construction of new ships for the Fleet. It would not be difficult to produce evidence to prove the loss of a quarter of a million pounds in the past few years owing to the present policy. It is full time that we had another energetic Dockyard Committee.

APPENDIX

APPENDIX

WARSHIPS OF THE WORLD'S NAVIES BUILT SINCE 1889

THE year 1889 is memorable as the date when the British Government embarked on the building of a large programme of ships of all classes, and this date has been chosen as the time from which to calculate the number of war-vessels built by the seven leading Powers. The date is also convenient because, owing to the progress of armour manufacture and the sciences of the artillerist and the mechanical engineer, few of the ships which were launched more than thirteen years ago can be considered to be in the first rank as fighting-machines. Events have been moving rapidly, and the ships that were the pride of nations but a few years ago have become obsolete. Even the *Royal Sovereign* type of British battleships, eight in number, which were built in the very early nineties, together with the *Barfleur* and *Centurion*, are to be taken in hand to have their secondary armaments strengthened, while such cruisers of comparatively recent construction as those of the *Talbot* and *Arrogant* classes, and the *Powerful* and *Terrible* also, are to have their offensive capabilities increased. On all grounds, 1889 is a convenient date from which to calculate the rise of the modern navies of the Powers.

Official basis of statistics.

The appended statistics have been based on the latest Admiralty return of the Fleets (Great Britain and Foreign Countries), dated March 28, 1901. The official classification has been adhered to in all cases except in one instance

where the name of an American cruiser and that of a battleship had been interchanged. The Admiralty return has been brought up to date from various sources, including the report on "Naval Progress," one of the excellent annual publications of the United States Naval Intelligence Department, over which Captain Sigsbee presides, and with so much profit to all naval students, it may be added. This report is compiled by the American naval *attachés*, and is therefore reliable. The details with reference to speed, coal-capacity, and approximate radius of action at a speed of ten knots an hour, have been obtained from this source, from "The Naval Annual," or "The Naval Pocket-book."

It will be seen from the summary of the statistics which appears at the beginning of the detailed particulars that, owing to the efforts of France and Russia—Russia in particular—we have a slight superiority in numbers in battleships, built or building, and we have a slight advantage in armoured cruisers. Our modest programmes of the past few years have not discouraged competitors; and in battleships we are not maintaining the two-power standard, since Russia and Germany have actually in hand fourteen to our thirteen. On no hypothesis can it be contended that Great Britain, in face of the large battleship programmes of Russia and Germany, is maintaining an adequate standard of strength. Russia and Germany will be the next two most formidable nations on the seas in a few years, judged by present indications, rather than Russia and France.

The German menace.

It may be that the Admiralty do not believe that war is possible at any future time with the German people. In that event, it can only be said that the naval authorities are at variance with many studious observers of the trend of opinion in that country. A definite alliance between Russia and Germany does not seem to these students an

impossible event. Both countries desire to develop commercially, and in the paths of both British merchants and British prestige are obstacles. Germany's naval development is one of the most striking incidents of the past few years, and it will still go on. About the year 1908 the Kaiser will have a squadron of at least 17 battleships at his command, all of the most modern types, and a similar number of older construction—even if the Reichstag sanctions the laying down of not a single keel beyond those provided in the Naval Bill. Germany with her 4342 miles of coast-line, her inconsiderable commerce in comparison with that of this country and the United States, and her small colonial possessions, is not building a navy for the mere purpose of protecting her shores, of affording protection to her sea-borne trade, or of using it for mere show purposes. Nor is it likely that when the navy has reached the limit fixed in the present measure, the German people, encouraged by their huge Naval League, with its branches in every town, and its membership of 566,141, basking under Imperial patronage, will starve the force in the construction of which they are already pledged to sink so much of their national capital.

GREAT BRITAIN *versus* POSSIBLE ALLIES.

Ships built (since 1889), building, or to be laid down in 1902.

Battleships—	Great Britain.		France and Russia.		Russia and Germany.
Built	30	...	29	...	31
Building	13	...	11	...	14
To be laid down, 1902	2	...	2*	...	3*
Total	45	...	42*	...	48*

[It must also be borne in mind that France and Germany have reconstructed 17 of the battleships launched prior to 1889.]

Armoured Cruisers—					
Built	4	...	12	...	4
Building	22	...	13	...	4
To be laid down, 1902 ...	2	...	2*	...	1*
Total	28	...	27	...	9
Protected Cruisers—					
Built	91	...	35	...	20
Building	4	...	12	...	15
To be laid down, 1902	2	...	—*	...	—*
Total	97	...	47	...	35

* Russia's programme for 1902 is not fully known.

SUMMARY OF SHIPS LAUNCHED OR BEGUN SINCE 1889.

	Great Britain.	France.	Russia.	Germany.	Italy.	United States.	Japan.
Battleships. Built	30	15*	14	17*	4	10	6
" " Building	13	4	7	7	4	8	—
Cruisers, armoured. Built	4	9	3	1	5	2	7
" " Building	22	12	1	3	1	9	—
Cruisers, protected. Built	91	30	5	15	9	10	10
" " Building	4	—	12	3	—	6	3
Cruisers, unprotected. Built	—	—	—	6	—	5	2
Coast-defence vessels. Built	—	2	7	—	—	2	—
" " " Building	—	—	1	—	—	4	—
Torpedo vessels	28	7	8	2	10	—	1
Torpedo-boat destroyers	134	31	43	30	11	20	16
Torpedo boats	23	200	86	39	52	32	50
Submarines. Built	5	10	—	—	1	1	—
" " Building	4	27	1	—	—	7	—

* France has reconstructed 12 and Germany 5 older battleships.

ARMOURED SHIPS TO BE LAID DOWN, 1902-3.

	Great Britain.	France.	Russia.	Germany.	Italy.	United States.	Japan.
Battleships	2	1†	1	2	—	3	1
Armoured Cruisers	2	2	(?)	1	—	2	—

† France is projecting three more battleships which are to be laid down early in 1903, and Russia is planning five additional battleships. Germany has arranged to lay down two more battleships in 1903.

THE EFFECTIVE FLEETS OF THE WORLD

WARSHIPS BUILT SINCE 1889

GREAT BRITAIN.

BATTLESHIPS.

BUILT.

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Formidable ... ... Irresistible ... ... Implacable ... ... Bulwark	1898–9	15,000	4 12-inch 12 6-inch 18 12-pr. Q.F. 14 smaller guns 4 torpedo-tubes	18	2,000	7,000
Ocean ... ... Glory ... ... Albion ... ... Goliath ... ... Vengeance ... ... Canopus	1897–9	12,950	4 12-inch 12 6-inch Q.F. 12 12-pr. Q.F. 14 smaller guns 4 torpedo-tubes	18½	2,040	8,000
Illustrious ... ... Cæsar ... ... Hannibal ... ... Majestic ... ... Magnificent ... Mars ... ... Jupiter ... ... Victorious ... ... Prince George ...	1895–6	14,900	4 12-inch 12 6-inch Q.F. 18 12-pr. Q.F. 20 smaller guns 5 torpedo-tubes	17½	1,850	7,000
Renown	1895	12,350	4 10-inch 10 6-inch Q.F. 14 12-pr. Q.F. 15 smaller guns 5 torpedo-tubes	18	1,800	7,200

BATTLESHIPS—BUILT—*continued.* (GREAT BRITAIN)

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Barfleur ... ... Centurion	1892	10,500	4 10-inch 10 4·7 Q.F. 27 light guns 7 torpedo-tubes	18½	1,240	9,750
Royal Oak ... ... Revenge ... ... Resolution ... ... Ramillies ... ... Repulse ... ... Hood ... ... Empress of India ... Royal Sovereign ...	1891-2	14,150	4 13·5-inch 10 6-inch Q.F. 36 light guns 7 torpedo-tubes	17½	1,450	7,900
BUILDING.						
London ... ... Venerable	1899	15,000	4 12-inch 12 6-inch 18 12-pr. Q.F. 14 smaller guns 4 torpedo-tubes	18	2,000	7,000
Duncan ... ... Cornwallis ... ... Russell ... ... Exmouth ... ... Albemarle ... ... Montagu	1901	14,000	4 12-inch 12 6-inch 12 12-pr. Q.F. 14 smaller guns 4 torpedo-tubes	19	2,000	7,000
Prince of Wales ... Queen	1902	15,000	4 12-inch 12 6-inch 18 12-pr. Q.F. 14 smaller guns 4 torpedo-tubes	18	2,000	7,000
King Edward VII. Dominion ... ... Commonwealth ...	—	16,350	4 12-inch 4 9·2-inch 10 6-inch B.L. 24 smaller guns	18½	2,300	—
ARMOURED CRUISERS.						
BUILT.						
Cressy ... ... Hogue ... ... Sutlej ... ... Aboukir	1899-1900	12,000	2 9·2-inch 12 6-inch 14 12-pr. Q.F. 11 smaller guns 2 torpedo-tubes	21*	1600	—

* On trial, 22·06 knots was obtained from the Hogue on an eight hours' run, and the Sutlej, Aboukir and Cressy steamed half a knot less at their tests.

ARMOURED CRUISERS—*continued.* (GREAT BRITAIN)

BUILDING.

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Monmouth ... ... Kent ... ... Bedford ... ... Essex	1901	9,800	14 6-inch 10 12-pr. Q.F. 11 smaller guns 2 torpedo-tubes	23	1,600	—
Bacchante ... ... Euryalus	1901	12,000	2 9·2-inch 12 6-inch 14 12-pr. Q.F. 11 smaller guns 2 torpedo-tubes	21	1,600	—
Drake ... ... King Alfred ... Good Hope ... ... Leviathan	1901	14,100	2 9·2-inch 16 6-inch 14 12-pr. Q.F. 12 smaller guns 2 torpedo-tubes	23	2,500	—
Suffolk ... ... Cornwall ... ... Berwick ... ... Donegal ... ... Cumberland ... Lancaster	—	9,800	14 6-inch 10 12-pr. Q.F. 11 smaller guns 2 torpedo-tubes	23	1,600	—
Devonshire ... ... Argyll ... ... Antrim ... ... Carnarvon ... ... Hampshire ... ... Roxburgh	—	10,200	2 7½-in. 10 6-in. Q.F. 11 smaller guns 2 torpedo-tubes	23	—	—

PROTECTED CRUISERS.

BUILT.

Ariadne ... ... Spartiate ... ... Amphitrite ... ... Argonaut	1898	11,000	16 6-inch Q.F. 14 12-pr. Q.F. 11 smaller guns 2 torpedo-tubes	20¾	2,000	—
Andromeda ... ... Europa ... ... Niobe ... ... Diadem	1896–7	11,000	16 6-inch Q.F. 14 12-pr. Q.F. 11 smaller guns 2 torpedo-tubes	20½	2,000	—
Powerful ... ... Terrible	1895	14,200	2 9·2-inch 12 6-inch Q.F. 18 12-pr. Q.F. 21 smaller guns 4 torpedo-tubes	22	3,000	25,000

PROTECTED CRUISERS—BUILT—*continued.* (GREAT BRITAIN)

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
St. George ... ... Royal Arthur ... Gibraltar ... ... Crescent	1891–2	7,700	2 9·2-inch 10 6-inch Q.F. 24 light guns 4 torpedo-tubes	19½	1,260	10,000
Theseus ... ... Edgar ... ... Endymion ... ... Grafton ... ... Hawke	1890–2	7,350	2 9·2-inch 10 6-inch Q.F. 24 light Q.F. guns 4 torpedo-tubes	20½	1,250	10,000
Blake ... ... Blenheim	1889–90	9,000	2 9·2-inch 10 6-inch Q.F. 23 light Q.F. guns 4 torpedo-tubes	21½	1,800	10,000
Hermes ... ... Highflyer ... ... Hyacinth	1898	5,600	11 6-inch Q.F. 9 12-pr. Q.F. 12 smaller guns 2 torpedo-tubes	20	1,100	—
Arrogant ... ... Vindictive ... ... Furious ... ... Gladiator	1896–9	5,750	4 6-inch Q.F. 6 4·7-inch Q.F. 9 12-pr. Q.F. 8 smaller guns 2 torpedo-tubes	19	1,175	9,000
Diana ... ... Dido ... ... Doris ... ... Isis ... ... Juno ... ... Venus	1895–6	5,600	5 6-inch Q.F. 6 4·7-inch Q.F. 9 12-pr. Q.F. 11 smaller guns 3 torpedo-tubes	19½	1,076	—
Eclipse ... ... Minerva ... ... Talbot ... ... Forte ... ... Flora	1894–5	5,600	5 6-inch Q.F. 6 4·7-inch Q.F. 9 12-pr. Q.F. 11 smaller guns 3 torpedo-tubes	19½	1,000	5,500
Hermione ... ... Fox ... ... Charybdis ... ... Astræa ... ... Cambrian	1892–3	4,360	2 6-inch Q.F. 8 4·7-inch Q.F. 13 light guns 4 torpedo-tubes	19½	1,000	5,700
Bonaventure ... Brilliant ... ... Iphigenia ... ... Æolus ... ... Retribution	1890–1	3,600	2 6-inch Q.F. 6 4·7-inch Q.F. 13 light guns 4 torpedo-tubes	19½	585	8,500
Intrepid ... ... Spartan ... ... Pique ... ... Sirius ... ... Rainbow ... ... Indefatigable ...						

PROTECTED CRUISERS—BUILT—*continued.* (GREAT BRITAIN)

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Sappho						
Scylla						
Tribune						
Andromache ...						
Melampus	1890–1	3,400	2 6-inch Q.F. 6 4·7-inch Q.F. 13 light guns 4 torpedo-tubes	20½	535	8,500
Naiad						
Thetis						
Apollo						
Terpsichore... ...						
Latona						
Pioneer						
Pomone						
Perseus						
Pyramus						
Pegasus						
Pactolus	1896–1900	2,135–2,200	8 4-inch Q.F. 11 light guns 2 torpedo-tubes	20	500	7,000
Proserpine						
Pelorus						
Prometheus ...						
Pandora						
Psyche						
Phœbe						
Philomel						
Pearl						
Pallas						
Wallaroo	1889–90	2,575	8 4·7-inch Q.F. 12 light Q.F. guns 4 torpedo-tubes	19	440	6,000
Katoomba						
Ringarooma ...						
Tauranga						
Mildura						
Barham	1889	1,830	6 4·7-inch Q.F. 6 light Q.F. guns 2 torpedo-tubes	19	140	2,600
Bellona						
Blanche						
Blonde	1889	1,580	6 4·7-inch Q.F. 6 light Q.F. guns 2 torpedo-tubes	16½	160	3,400
Barracouta						
Barrosa						

BUILDING.

Challenger	1901	5,880	11 6-inch 9 12-pr. Q.F. 15 smaller guns 2 torpedo-tubes	21	1,000	—
Encounter						
Topaze	—	3000	12 4-inch Q.F. 8 3-pr. Q.F.	21¾	600	—
Amethyst						

TORPEDO-VESSELS (TORPEDO-BOAT CATCHERS).

BUILT.

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
28	1889–94	735–1070	2 4·7-inch Q.F. 5 light Q.F. and machine-guns 3 or 5 torpedo-tubes	—	—	—

TORPEDO-BOAT DESTROYERS.

BUILT, BUILDING, OR IN PREPARATION.

134 vessels	1893	230–430	1 12-pr. Q.F. 3 to 5 smaller light Q.F. 2 or 3 torpedo-tubes	27–32	60–100	—

FIRST-CLASS TORPEDO-BOATS.

BUILT, BUILDING, OR IN PREPARATION.

28 vessels	1889–1900	90–180	Various	18	18–25	—

SUBMARINES.

BUILT OR BUILDING.

5 vessels	1901	—	—	—	—	—

IN PREPARATION.

4 vessels	—	—	—	—	—	—

FRANCE.

BATTLESHIPS.

BUILT.

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Jéna (*b*)	1898	11,861	4 12-inch 8 6·5-inch Q.F. 8 4-inch Q.F. 26 small guns 4 torpedo-tubes	18	1,100	7,000
St. Louis (*b*) ... Charlemagne (*b*) ...	1895–6	11,090	4 12-inch 10 5·5-inch Q.F. 8 4-inch Q.F. 26 small guns 4 torpedo-tubes	18	1,100	7,000
Gaulois (*b*)	1896	11,105	4 12-inch 10 5·5-inch Q.F. 8 4-inch Q.F. 26 small guns 4 torpedo-tubes	18	1,100	7,000
Bouvet	1896	12,007	2 12-inch 2 10·8-inch 8 5·5-inch Q.F. 8 4-inch Q.F. 19 or 20 small guns 4 torpedo-tubes	18	800	5,000
Masséna	1895	11,735				
Carnot	1894	11,954	2 12-inch 2 10·8-inch 8 5·5-inch Q.F. 26 small guns 4 torpedo-tubes	18	705	5,000
Charles Martel ...	1893	11,693	2 12-inch 2 10·8-inch 8 5·5-inch Q.F. 27 small guns 4 torpedo-tubes	18	1,000	5,000

BATTLESHIPS—BUILT—*continued.* (FRANCE)

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Jauréguiberry ...	1893	11,637	2 12-inch 2 10·8-inch 8 5·5-inch Q.F. 28 small guns 4 torpedo-tubes	18	1,100	—
Brennus	1891	11,190	3 13·4-inch 10 6·5-inch Q.F. 23 small guns 4 torpedo-tubes	17	800	4,500
Magenta	1890	10,680	4 13·4-inch 14 5·5-inch Q.F. 28 small guns 3 torpedo-tubes	18	800	4,000
Amiral Tréhouart (*a*)	1893	6,671	2 12-inch 8 4-inch Q.F. 16 small guns 2 torpedo-tubes	17½	300	—
Bouvines (*a*) ...	1892	6,691	2 12-inch 8 4-inch Q.F. 14 small guns 2 torpedo-tubes	17	300	—
Valmy (*a*)	1892	6,477	2 13·4-inch 4 4-inch Q.F. 14 small guns 2 torpedo-tubes	17	300	—
Jemmapes (*a*) ...	1892	6,474	2 13·4-inch 4 4-inch Q.F. 14 small guns 2 torpedo-tubes	17	300	—
OLDER BATTLESHIPS RECONSTRUCTED.						
Neptune	1901 (1887)	10,810	4 13·4-inch 16 5·5-inch Q.F. 26 small guns 5 torpedo-tubes	16	800	4,000
Marceau	1901 (1887)	10,679	4 13·4-inch 17 5·5-inch Q.F. 26 small guns 4 torpedo-tubes	16½	800	4,000
Hoche	1900 (1886)	10,823	2 13·4-inch 2 10·8-inch 12 5·5-inch Q.F. 18 small guns 5 torpedo-tubes	16	800	4,000

BATTLESHIPS—RECONSTRUCTED—*continued.* (FRANCE)

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Formidable	1897–1900 (1885)	11,391	2 14·5-inch 4 6·6-inch Q.F. 8 5·5-inch Q.F. 27 small guns 6 torpedo-tubes	16	900	3,200
Caiman (*a*) ...	1901 (1885)	7,495	2 10·8-inch 4 4-inch Q.F. 20 small guns 2 torpedo-tubes	15	800	—
Requin (*a*)	1901 (1885)	7,698	2 10·8-inch 6 4-inch Q.F. 16 small guns 4 torpedo-tubes	15	800	—
Indomptable (*a*) ...	1901 (1883)	7,463	2 10·8-inch 6 4-inch Q.F. 12 small guns 2 torpedo-tubes	15	800	—
Amiral Baudin (*b*)	1897–9 (1883)	11,442	2 14·5-inch 4 6·5-inch Q.F. 8 5·5-inch Q.F. 25 small guns 4 torpedo-tubes	14½	800	3,000
Courbet	1898–1900 (1882)	10,868	4 10·8-inch 3 9·5-inch 11 5·5-inch Q.F. 12 small guns 5 torpedo-tubes	15½	900	—
Terrible (*a*) ...	1900 (1881)	7,455	2 13·4-inch 4 4-inch Q.F. 16 small guns 4 torpedo-tubes	14½	800	—
Amiral Duperré ...	1901 (1879)	11,082	3 13·4-inch 2 6·5-inch Q.F. 1 5·5-inch Q.F. 14 4-inch Q.F. 40 small guns 4 torpedo-tubes	14½	850	—
Dévastation ...	1901 (1879)	10,535	4 10·8-inch 2 9·5-inch 6 5·5-inch Q.F. 4 4-inch Q.F. 26 small guns 4 torpedo-tubes	15	820	—

BATTLESHIPS—RECONSTRUCTED—*continued.* (FRANCE)

BUILDING.

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Henri IV.	1899	8,807	2 10·8-inch 7 5·5-inch Q.F. 16 small guns 2 torpedo-tubes	17	1,100	7,500
La Patrie ... ... Republique	—	14,630	4 12-inch 18 6·5-inch Q.F. 28 small guns 5 torpedo-tubes	18	1,825	8,390
Suffren (*b*)	1899	12,527	4 12-inch 10 6·5-inch Q.F. 8 4-inch Q.F. 26 small guns 4 torpedo-tubes	18	1,150	7,000

ARMOURED CRUISERS.

BUILT.

Montcalm (*b*) ... Gueydon (*b*) ...	1900 1899	9,367	2 7·6-inch 8 6·5-inch Q.F. 4 4-inch Q.F. 24 small guns 2 torpedo-tubes	21	1,600	10,000
Jeanne d'Arc (*b*) ...	1899	11,092	2 7·6-inch 14 5·5-inch Q.F. 22 small guns 2 torpedo-tubes	23	2,100	13,500
Bruix	1894	4,735	2 7·6-inch 6 5·5-inch Q.F. 16 small guns 4 torpedo-tubes	19	406	—
Chanzy	1894	4,736	2 7·6-inch 6 5·5-inch Q.F. 14 small guns 4 torpedo-tubes	18½	413	—
Amiral Charner ...	1893	4,702	2 7·6-inch 6 5·5-inch Q.F. 14 small guns 4 torpedo-tubes	18½	413	—
Latouche Tréville ...	1892	4,681	2 7·6-inch 6 5·5-inch Q.F. 14 small guns 4 torpedo-tubes	18½	406	—

ARMOURED CRUISERS—BUILT—*continued.* (FRANCE)

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Dupuy-de-Lôme ...	1890	6,676	2 7·6-inch 6 6·5-inch Q.F. 20 small guns 2 torpedo-tubes	20	1,300	10,000
Pothuau	1895	5,374	2 7·6-inch 10 5·5-inch Q.F. 18 small guns 4 torpedo-tubes	19½	538	—
BUILDING.						
Dupetet Thouars (*b*)	1901	9,367	2 7·6-inch 8 6·5-inch Q.F. 4 4-inch Q.F. 24 small guns 2 torpedo-tubes	21	1,600	10,000
Gloire (*b*)	1900	9,856	2 7·6-inch 8 6·5-inch Q.F. 6 4-inch Q.F. 26 small guns 4 torpedo-tubes	21	1,600	10,400
Condé (*b*)	1901					
Sully (*b*)	1901					
Marseillaise (*b*) ...	1900					
Amiral Aube (*b*) ...	1901					
Kléber	1901	7,578	8 6·5-inch Q.F. 4 4-inch Q.F. 22 small guns 2 torpedo-tubes	21	1,200	8,800
Dupleix	1900					
Desaix	1901					
Jules Ferry (*b*) ...	—	12,351	4 7·6-inch 16 6·5-inch Q.F. 24 small guns 5 torpedo-tubes	22	2,100	10,000
Léon Gambetta (*b*) ...						
Victor Hugo (*b*) ...						

PROTECTED CRUISERS.

BUILT.

Guichen (*b*) ...	1897	8,151	2 6·5-inch Q.F. 6 5·5-inch Q.F. 15 small guns 2 torpedo-tubes	23	2,000	16,000
Châteaurenault ...	1898	7,898	2 6·5-inch Q.F. 6 5·5-inch Q.F. 15 small guns 2 torpedo-tubes	23	2,100	10,000
L'Entrecasteaux (*b*)	1896	7,995	2 9·5-inch 12 5·5-inch Q.F. 18 small guns 6 torpedo-tubes	19	1,000	—

PROTECTED CRUISERS—BUILT—*continued.* (FRANCE)

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Jurien de la Gravière(*b*)	1899	5,595	8 6·5-inch Q.F. 18 small guns 2 torpedo-tubes	23	900	9,300
Protet	1898	4,001	4 6·5-inch Q.F. 10 4-inch Q.F. 14 small guns 2 torpedo-tubes	20	563	6,000
Catinat	1896	4,048	4 6·5-inch Q.F. 10 4-inch Q.F. 15 small guns 2 torpedo-tubes	20	563	6,000
Cassard	1896	3,890	6 6·5-inch Q.F. 4 4-inch Q.F. 15 small guns 2 torpedo-tubes	19¾	630	6,000
D'Assas	1896	3,962	6 6·5-inch Q.F. 4 4-inch Q.F. 19 small guns 2 torpedo-tubes	19¼	630	6,000
Du Chayla	1895	3,890	6 6·5-inch Q.F. 4 4-inch Q.F. 15 small guns 2 torpedo-tubes	20½	624	6,000
Bugeaud	1893	3,809	6 6·5-inch Q.F. 4 4-inch Q.F. 15 small guns 2 torpedo-tubes	19	587	5,500
Chasseloup-Laubat	1893	3,824	6 6·5-inch Q.F. 4 4-inch Q.F. 15 small guns 2 torpedo-tubes	19½	587	5,500
Friant	1893	3,882	6 6·5-inch Q.F. 4 4-inch Q.F. 15 small guns 2 torpedo-tubes	18	587	5,500
Pascal	1895	3,951	4 6·5-inch Q.F. 10 4-inch Q.F. 22 small guns 2 torpedo-tubes	20	745	7,000
Descartes	1894	3,970	4 6·5-inch Q.F. 10 4-inch Q.F. 12 small guns 2 torpedo-tubes	21	745	7,000

PROTECTED CRUISERS—BUILT—*continued.* (FRANCE)

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Isly	1891	4,406	4 6·5-inch Q.F. 6 5·5-inch Q.F. 22 small guns 3 torpedo-tubes	18½	880	3,500
Jean Bart	1889	4,044	4 6·5-inch Q.F. 6 5·5-inch Q.F. 20 small guns 5 torpedo-tubes	19	940	4,000
Suchet	1893	3,362	6 6·5-inch Q.F. 4 4-inch Q.F. 16 small guns 7 torpedo-tubes	20¼	480	6,500
Alger	1889	4,313	4 6·5-inch Q.F. 6 5·5-inch Q.F. 20 small guns 5 torpedo-tubes	19½	860	—
Davout	1889	3,031	6 6·5-inch Q.F. 16 small guns 4 torpedo-tubes	20	600	—
Lavoisier	1897	2,285	4 5·5-inch Q.F. 2 4-inch Q.F. 14 small guns 2 torpedo-tubes	20	226	3,000
Galilée	1896	2,318	4 5·5-inch Q.F. 2 4-inch Q.F. 14 small guns 2 torpedo-tubes	20	380	3,000
Linois	1894	2,308	4 5·5-inch Q.F. 2 4-inch Q.F. 11 small guns 4 torpedo-tubes	20½	200	—
Cosmao	1889	1,923	4 5·5-inch Q.F. 14 small guns 4 torpedo-tubes	20½	330	3,500
Lalande	1889	1,968	4 5·5-inch Q.F. 14 small guns 4 torpedo-tubes	22	330	3,500
Surcouf	1889	2,012	4 5·5-inch Q.F. 12 small guns 4 torpedo-tubes	20½	287	3,000
D'Estrées	1897	2,421	2 5·5-inch Q.F. 4 4-inch Q.F. 11 small guns	20½	570	4,500

PROTECTED CRUISERS—BUILT—*continued.* (FRANCE)

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Infernet	1899	2,435	2 5·5-inch Q.F. 4 4-inch Q.F. 11 small guns	20½	570	4,500
Vautour	1889	1,266	5 4-inch Q.F. 12 small guns 4 torpedo-tubes	17¼	150	—
Fleurus	1893	1,289	5 4-inch Q.F. 10 small guns 4 torpedo-tubes	18	118	2,000
Wattignies	1891	1,272	5 4-inch Q.F. 10 small guns 4 torpedo-tubes	18½	160	2,300

ARMOURED COAST-DEFENCE VESSELS.

BUILT.

Styx ... ... Phlégéton	1891 1890	1,767	1 10·8-inch 1 5·5-inch Q.F. 7 small guns	18	72	—

TORPEDO-VESSELS.

BUILT.

7 vessels	1891	509–974	—	—	—	—

TORPEDO-BOAT DESTROYERS.

BUILT AND BUILDING.

31 vessels	1899–1900	298–306	7 small Q.F. guns 2 torpedo-tubes	22–30	—	—

TORPEDO-BOATS.

BUILT OR BUILDING.

Sea-going— 38 vessels ...	1891–1900	104–150	Various	20–30	17–40	—
First-class— 132 vessels ...	1889–1900	66–86	Various	—	—	—
Second-class— 30 vessels ...	1889–1892	54	Various	—	—	—

SUBMARINE BOATS. (FRANCE)

BUILT.

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Narval	1899	104	4 torpedo-discharges	—	—	—
Gymnote	1889	44	2 torpedo-discharges	—	—	—
Gustave Zédé ...	1893	202	1 torpedo-tube	—	—	—
Morse	1899	135				
Français, Algérien — Morse type	1901	144	1 torpedo-tube	—	—	—
Sirène, Triton — Improved Narval type	1901	104	4 torpedo-discharges	—	—	—
Silure, Espadon — Improved Triton type	—	104	4 torpedo-discharges	—	—	—

BUILDING.

Farfadet, Gnôme, Korrigan, Lutin — Improved Morse type	—	182	4 torpedo-discharges	—	—	—
Q 15 to Q 22 (8 boats) — Improved Triton type	—	104				
2 boats	—	—	—	—	—	—
13 boats	—	—	—	—	—	—

RUSSIA.

BATTLESHIPS.

BUILT.

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Rostislav (*b*) ...	1896	8,880	4 10-inch 8 6-inch Q.F. 28 smaller guns 4 torpedo-tubes	16	800	2,000
Sevastopol ... .. Poltava ... ... Petropavlovsk ...	1894–5	10,960	4 12-inch 12 6-inch Q.F. 38 smaller Q.F. light and machine-guns 4 torpedo-tubes	17½	1,050	3,400
Sisoi Veliki... ...	1894	8,880	4 12-inch 6 6-inch Q.F. 32 smaller guns 6 torpedo-tubes	16	550	—
Tri Svyatitelya (*b*) (Three Saints)	1893	12,480	4 12-inch 8 6-inch Q.F. 4 4·7-inch Q.F. 52 smaller guns 7 torpedo-tubes	17¾	1,000	3,900
Georgi Pobyedonosets (George the Victorious)	1892	10,280	6 12-inch 7 6-inch 26 smaller guns 7 torpedo-tubes	16½	1,000	3,000
Navarin	1891	9,476	4 12-inch 8 6-inch 29 smaller guns 6 torpedo-tubes	16	1,200	—
Dvyenadtsat Apostolof (Twelve Apostles)	1890	8,400	4 12-inch 4 6-inch 32 smaller guns 6 torpedo-tubes	16½	800	—

BATTLESHIPS—BUILT—*continued.* (RUSSIA)

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Imperator Nikolai I.	1889	9,500	2 12-inch 4 9-inch 8 6-inch 22 smaller guns 6 torpedo-tubes	16	1,200	—
Peresvyet (*b*) ... Polyeda (*b*) ... Oslyabya (*b*) ...	1898	12,674	4 10-inch 11 6-inch Q.F. 44 smaller guns 5 torpedo-tubes	18	2,056	—
Retvizan (*b*) ...	1900	12,700	4 12-inch 12 6-inch Q.F. 48 smaller guns 6 torpedo-tubes	18	2,000	8,300
BUILDING.						
Knyaz Potemkin (*b*)	1900	12,600	4 12-inch 16 6-inch Q.F. 28 smaller guns 5 torpedo-tubes	17	900	4,000
Borodino	1901	13,516	4 12-inch 12 6-inch Q.F. 48 smaller guns 6 torpedo-tubes	18	2,000	—
Imperator Alex. III.	1901	13,516				
Orel	—	13,516				
Tsesarevitch ...	1901	12,900				
Kniaz Suvoroff ... Slava	—	13,600	—	—	—	—

ARMOURED CRUISERS.

BUILT.

Gromoboi	1899	12,364	4 8-inch 16 6-inch Q.F. 32 smaller guns 4 torpedo-tubes	20	2,100	17,500
Rossia	1896	12,200	4 8-inch 16 6-inch 50 smaller guns 5 torpedo-tubes	20	2,500	19,000
Rurik	1892	10,933	4 8-inch 16 6-inch Q.F. 6 4·7 inch Q.F. 18 smaller guns 4 torpedo-tubes	18	2,000	19,000

ARMOURED CRUISERS—*continued.* (RUSSIA)

BUILDING.

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Bayan	1900	7,800	2 8-inch 8 6-inch Q.F. 27 smaller guns 6 torpedo-tubes	21	400	3,000

PROTECTED CRUISERS.

BUILT.

Varyag	1899	6,500	12 6-inch 22 smaller guns 6 torpedo-tubes	23½	1,250	—
Diana ... ... Pallada	1899	6,630	8 6-inch 34 smaller Q.F. light and machine guns 3 torpedo-tubes	20	1,430	5,600
Svyetlana	1896	3,862	6 6-inch Q.F. 12 smaller guns 2 torpedo tubes	20	400	7,000
Novik (*e*)	1900	3,000	6 4·7-inch 9 smaller guns 6 torpedo-tubes	25	500	6,000

BUILDING.

Askold	1900	6,000	12 6-inch 24 smaller guns 6 torpedo-tubes	23	1,100	
Kagoula (*e*) ... Almaz (*e*) ... ... Jemtchug (*e*) ... Izumrud (*e*) ... One unnamed (*e*) ...	1900	3,000	6 4·7-inch 9 smaller guns 6 torpedo-tubes	25	500	6,000
Aurora	1900	6,630	8 6-inch Q.F. 34 smaller guns 3 torpedo-tubes	20	1,430	5,600
Bogatyr	—	6,720	12 6-inch Q.F. 21 smaller guns 6 torpedo-tubes	23	1,430	—
Boyarin	—	3,060	6 4·7-inch Q.F. 14 smaller guns 5 torpedo-tubes	23	650	5,000

PROTECTED CRUISERS—BUILDING—*continued.* (RUSSIA)

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Kagul ... ... Otchakow ... ... Oleg	—	6,250	12 6-inch Q.F. 20 smaller guns 6 torpedo-tubes	23	1,430	—

ARMOURED COAST-DEFENCE VESSELS.

BUILT.

Gen.-Admiral Apraxin	1896	4,126	3 10-inch 4 4·7-inch Q.F. 22 smaller guns 4 torpedo-tubes	15	400	2,500
Khrabri	1895	1,492	2 8-inch 1 6-inch Q.F. 10 smaller guns 1 torpedo-tube	15	200	—
Admiral Senyavin ... Admiral Ushakof ...	1894 1893	4,126	4 10-inch 4 4·7-inch Q.F. 24 smaller guns 4 torpedo-tubes	16	400	2,500
Otvajni ... ... Gremyashtchi ... Grozyashtchi ...	1892 1892 1890	1,492	1 9-inch 1 6-inch 8–10 smaller guns 2 torpedo-tubes	15	200	—

BUILDING.

Admiral Butakoff ...	—	5,000	6 8-in. 12 smaller guns	16	—	—

TORPEDO-VESSELS.

BUILT.

8 vessels	1889	400–742	Various	—	—	—

TORPEDO-BOAT DESTROYERS.

BUILT AND BUILDING.

43 vessels	1895–1900	240–350	1 12-pr. Q.F. 5 small Q.F. guns 3 torpedo-tubes	27–30	—	—

TORPEDO-BOATS. (RUSSIA)

BUILT AND BUILDING.

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
First-class—						
81 vessels ...	1889–1900	80–215	Various	—	—	—
Second-class—						
5 vessels	—	—	—	—	—	—

SUBMARINE BOAT.

BUILDING.

One	1901	—	—	—	—	—

GERMANY.

BATTLESHIPS.

BUILT.

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Kaiser Wilhelm II. Kaiser Friedrich III. Kaiser Wilhelm der Grosse ... ... Kaiser Karl der Grosse ... ... Kaiser Barbarossa ...	1896–7 1899–90	10,905	4 9·4-inch Q.F. 18 6-inch Q.F. 32 smaller guns 6 torpedo-tubes	18	1,000	—
Ægir (*a*) ... ... Odin (*a*) ... ... Hagen (*a*)	1895 1894 1893	3,474 3,474 3,600	3 9·6-inch 16 smaller guns 3 torpedo-tubes	15	500	4,000
Hildebrand ... ... Heimdall	1892	3,440	3 9·6-inch 14 smaller guns 4 torpedo-tubes	15	225	—
Wörth ... ... Brandenburg ... Kurfürst Friedrich Wilhelm ... ... Weissenburg ...	1891–2	9,874	6 11-inch 6 4·2-inch Q.F. 30 smaller guns 6 torpedo-tubes	16	750	—
Frithjof (*a*) ... ... Beowulf (*a*) ... ... *Siegfried (*a*) ...	1889–91	3,440	3 9·6-inch 14 smaller guns 4 torpedo-tubes	15	500	4,000
OLDER BATTLESHIPS RECONSTRUCTED.						
Oldenburg	1884	5,118	8 9·6-inch 14 light and machine guns 4 torpedo-tubes	13	250	1,800

* Reconstructed, 1901.

BATTLESHIPS—RECONSTRUCTED—*continued.* (GERMANY)

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Baden ... ... Bayern ... ... Württemberg ... Sachsen	1877–80	7,283	6 10·2-inch 28 smaller guns 5 torpedo-tubes	17	700	3,000
BUILDING.						
Wittelsbach (*b*) ... Schwaben (*b*) ... Wettin (*b*) ... ... Zahringen (*b*) ... Mecklenburg (*b*) ...	1900–1	11,800	4 9·4-inch Q.F. 18 6-inch Q.F. 32 smaller guns 8 torpedo-tubes	18	1,250	—
H, J (Two in number)	—	13,000	—	19	—	—

ARMOURED CRUISERS.

BUILT.

Furst Bismarck ...	1897	10,482	4 9·4-inch Q.F. 12 6-inch Q.F. 28 smaller guns 6 torpedo-tubes	19	1,000	—

BUILDING.

Prinz Heinrich ...	1900	8,760	2 9·4-inch Q.F. 10 6-inch Q.F. 20 smaller guns 3 torpedo-tubes	20½	1,500	—
Konig Wilhelm ... Prinz Adalbert ...	— 1901	9,048	4 9·4-inch Q.F. 10 6-inch Q.F. 20 smaller guns	22	—	—

PROTECTED CRUISERS.

BUILT.

Niobe ... ... Nymphe ... ... Gazelle	1898–9	2,600	10 4·2-inch Q.F. 18 smaller guns 3 torpedo-tubes	21	550	5,000

PROTECTED CRUISERS—BUILT—*continued.* (GERMANY)

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Hansa ... ... Vineta ... ... Hertha ... ... Freya ... ... Victoria Luise ...	1897–8	5,589	2 8·2-inch Q.F. 8 6-inch Q.F. 24 smaller guns 3 torpedo-tubes	19	950	6,600
Gefion	1893	4,044	10 4·2-inch Q.F. 15 smaller guns 2 torpedo-tubes	19	950	6,800
Kaiserin Augusta ...	1892	5,956	12 6-inch Q.F. 18 smaller guns 5 torpedo-tubes	21	800	4,200
Thetis ... ... Ariadne ... ... Amazone ... ... Medusa	1900–1	2,600	10 4·2-inch Q.F. 18 smaller Q.F. guns 3 torpedo-tubes	20	550	5,000
Hela	1895	1,971	10 small Q.F. guns 3 torpedo-tubes	20	340	3,500

BUILDING.

Frauenlob ... ... H ... ... J	1901	2,600	10 4·2-inch Q.F. 18 smaller Q.F. guns 3 torpedo-tubes	20	550	5,000

UNPROTECTED CRUISERS.

BUILT.

Geier	1894	1,597	8 4·2-inch Q.F. 7 light guns 2 torpedo-tubes	16	400	4,300
Falke	1890	1,555				
Bussard	1890	1,555				
Seeadler ... ... Cormoran ... ... Condor	1892	1,614	8 4·2-inch Q.F. 7 machine-guns 2 torpedo-tubes	16	400	6,000

TORPEDO-VESSELS.

BUILT.

2 vessels	1890–2	931	8 small guns 3 torpedo-tubes	—	—	—

TORPEDO-BOAT DESTROYERS. (GERMANY)

BUILT AND BUILDING.

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
30 vessels	1894–1900	250–350	{3 small Q.F. guns 3 torpedo-tubes}	22–27½	80–90	—

TORPEDO-BOATS.

BUILT.

First-class—						
34 vessels ...	1890–1900	100–350	Various	—	—	—
Second-class—						
5 vessels	1893	—	—	—	—	—

ITALY.

BATTLESHIPS.

BUILT.

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Sicilia (*b*)	1891	13,087	4 13·5-inch 8 6-inch Q.F. 16 4·7-inch Q.F. 29 small guns 5 torpedo-tubes	20¼	300	—
Sardegna (*b*) ...	1890	13,640				
Ammiraglio di Saint Bon ... ... Emanuele Filiberto	1897	9,645	4 10-inch 8 6-inch Q.F. 8 4·7-inch Q.F. 24 small guns 4 torpedo-tubes	18	2,000	7,500

BUILDING.

Benedetto Brin ... Regina Margherita	1901	13,214	4 12-inch 4 8-inch Q.F. 12 6-inch Q.F. 30 small guns 4 torpedo-tubes	20	2,000	10,000
Regina Elena ... Vittorio Emanuele ...	—	12,425	2 12-inch 12 8-inch Q.F. 26 small guns 4 torpedo-tubes	22	2,800	10,000

ARMOURED CRUISERS.

BUILT.

Varese ... ... Garibaldi	1899	7,294	1 10-inch 2 8-inch Q.F. 14 6-inch Q.F. 20 small guns 4 torpedo-tubes	20	1,500	9,300

ARMOURED CRUISERS—BUILT—*continued.* (ITALY)

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Carlo Alberto (*b*) ... Vettor Pisani (*b*) ...	1895-6	6,396	12 6-inch Q.F. 6 4·7-inch Q.F. 26 small guns 4 torpedo-tubes	19½	1,000	6,000
Marco Polo	1892	4,511	6 6-inch Q.F. 10 4·7-inch Q.F. 17 small guns 5 torpedo-tubes	19	680	—
BUILDING.						
Francesco Ferrucio...	1902	7,294	1 10-inch 2 8-inch Q.F. 14 6-inch Q.F. 20 smaller guns 4 torpedo-tubes	20	1,500	9,300

PROTECTED CRUISERS.

BUILT.

Coatit (*b*) ... ... Agordat (*b*) ...	1899	1,292	12 small guns 2 torpedo-tubes	23	260	—
Puglia (*b*) ... ... Calabria (*b*) ... Elba ... ... Liguria ... ... Umbria ... ... Etruria ... ... Lombardia	1891-8	2,245–2,689	4 6-inch Q.F. 6 4·7-inch Q.F. 19 small guns 2 torpedo-tubes	18–20	480–650	—

TORPEDO-VESSELS.

BUILT.

10 vessels	1889–94	756–833	2 4·7-inch Q.F. 6 machine-guns 5 torpedo-tubes	—	—	—

TORPEDO-BOAT DESTROYERS.

BUILT OR BUILDING.

11 vessels	1899–1900	293–315	6 small guns 2 torpedo-tubes	28–30	43	—

TORPEDO-BOATS. (ITALY)

BUILT.

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
First-class— 4 vessels	—	—	—	—	—	—
Second-class— 48 vessels ...	1889–99	80–149	2 small guns, 2 torpedo-tubes	22–26½	—	—

SUBMARINE-BOAT.

BUILT.

Delfino	1892	—	—	—	—	—

UNITED STATES.

BATTLESHIPS.

BUILT.

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Kearsarge ... ... Wisconsin ... ... Alabama ... ... Kentucky ... ... Illinois	1898	11,525	4 13-inch 4 8-inch 14 5-inch Q.F. 32 smaller guns 4 torpedo-tubes	16	1,200	6,000
Iowa	1896	11,340	4 12-inch 8 8-inch 6 4-inch Q.F. 30 smaller guns 4 torpedo-tubes	18	1,795	4,000
Indiana ... ... Massachusetts ... Oregon	1893	10,288	4 13-inch 8 8-inch 4 6-inch 30 smaller guns 3 torpedo-tubes	15½	1,597	5,500
Texas	1892	6,315	2 12-inch 6 6-inch 25 smaller guns 2 torpedo-tubes	17¾	850	2,900

BUILDING.

Maine ... ... Ohio... ... ... Missouri	1901	12,500	4 12-inch 16 6-inch Q.F. 31 smaller guns 2 torpedo-tubes	18	2,000	5,500
Nebraska ... ... New Jersey ... Georgia ... ... Virginia ... ... Rhode Island ...	—	14,650	4 12-inch 8 8-inch 12 6-inch Q.F. 40 smaller guns 2 torpedo-tubes	18½	2,200	—

ARMOURED CRUISERS. (UNITED STATES)

BUILT.

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Brooklyn	1895	9,215	8 8-inch 12 5-inch Q.F. 22 smaller guns 4 torpedo-tubes	22	1,461	5,110
New York	1891	8,200	6 8-inch 12 4-inch Q.F. 14 smaller guns 2 torpedo-tubes	21	1,290	5,000

BUILDING.

Pennsylvania ... West Virginia ... California ... Maryland ... Colorado ... South Dakota ...	—	13,400	4 8-inch 14 6-inch Q.F. 18 14-pr. Q.F. 30 smaller guns 2 torpedo-tubes	18½	2,200	—
St. Louis ... Milwaukee ... Charleston ...	—	9,700	—	18½	1,500	—

PROTECTED CRUISERS.

BUILT.

Albany ... New Orleans ...	1896-9	3,437	6 6-inch Q.F. 4 4·7-inch Q.F. 20 smaller guns	20	800	—
Minneapolis ... Columbia ...	1892-3	7,375	1 8-inch 2 6-inch Q.F. 8 4-inch Q.F. 17 smaller guns 4 torpedo-tubes	23	1,891	6,300
Olympia	1892	5,870	4 8-inch 10 5-inch Q.F. 24 smaller guns 4 torpedo-tubes	21½	1,169	6,100
Raleigh ... Cincinnati ...	1892	3,213	1 6-inch Q.F. 10 5-inch Q.F. 15 smaller guns	19	500	3,000
Newark ... ... Philadelphia ...	1890 1889	4,098 4,324	12 6-inch 15 smaller guns	19	809	5,656
San Francisco ...	1889	4,098	12 6-inch 19 smaller guns 2 torpedo-tubes	19½	628	4,000

PROTECTED CRUISERS—*continued.* (UNITED STATES)

BUILDING.

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Des Moines	—	3,500	10 5-inch Q.F. 15 smaller guns	16½	700	6,925
Chattanooga ...						
Galveston						
Denver						
Tacoma						
Cleveland						

UNPROTECTED CRUISERS.

BUILT.

Marblehead ...	1891–2	2,089	10 5-inch Q.F. 11 smaller guns	18½	340	3,000
Detroit						
Montgomery ...						
Concord	1890	1,710	6 6-inch 9 smaller guns	17	400	4,000
Bennington						

ARMOURED COAST-DEFENCE VESSELS.

BUILT.

Katahdin	1893	2,155	4 small guns	16	192	1,000
Monteney	1891	4,080	2 12-inch 2 10-inch 13 small guns	18½	236	1,430

BUILDING.

Nevada	1900	3,235	2 12-inch 4 4-inch Q.F. 10 smaller guns	11½	400	—
Wyoming						
Arkansas						
Florida						

TORPEDO-BOAT DESTROYERS.

BUILT.

20 vessels	1899–1900	247-433	7 small Q.F. guns 2 torpedo-tubes	24–30	20–332	—

TORPEDO-BOATS. (UNITED STATES)

BUILT AND BUILDING.

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
32 vessels	1896–1900	46–182	1–4 small Q.F. guns 2–3 torpedo-tubes	—	—	—

SUBMARINE BOATS.

BUILT.

Holland	1897	75	1 high-explosive gun 1 torpedo-tube	—	—	—

BUILDING.

Plunger ... ... Grampus ... ... Pike... ... ... Porpoise ... ... Shark ... ... Adder ... ... Moccassin	—	120	1 torpedo-tube	—	—	—

JAPAN.

BATTLESHIPS.

BUILT.

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Hatsuse ... ... / Mikasa ... ... / Asahi	1899	15,200	4 12-inch, 14 6-inch Q.F., 32 smaller guns, 4 torpedo-tubes	19	1,400	9,000
Shikishima	1898	14,850	4 12-inch, 14 6-inch Q.F., 32 smaller guns, 5 torpedo-tubes	18½	1,300	—
Fuji	1896	12,450	4 12-inch, 10 6-inch Q.F., 22 smaller guns, 5 torpedo-tubes	18½	1,300	7,000
Yashima	1896	12,300				

ARMOURED CRUISERS.

BUILT.

Idzumo ... ... / Iwate ... ... / Yakumo	1899–1900	9,750	4 8-inch Q.F., 12 6-inch Q.F., 19 smaller guns, 5 torpedo-tubes	20½	1,400	10,000
Adzuma	1899	9,287	4 8-inch Q.F., 12 6-inch Q.F., 24 smaller guns, 5 torpedo-tubes	21	1,300	7,000
Asama ... ... / Tokiwa	1898	9,750	4 8-inch Q.F., 14 6-inch Q.F., 19 smaller guns, 5 torpedo-tubes	22	1,200	10,000
Chiyoda	1890	2,450	10 4·7-inch Q.F., 17 smaller guns, 3 torpedo-tubes	17½	420	—

PROTECTED CRUISERS. (JAPAN)

BUILT

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Chitose	1898	4,760	2 8-inch Q.F. 10 4·7-inch Q.F. 18 smaller Q.F. guns 5 torpedo-tubes	22½	1,000	4,000
Kasagi	1898	4,784				
Takasago	1897	4,160				
Akitsushima ...	1892	3,100	4 6-inch Q.F. 6 4·7-inch Q.F. 12 smaller guns 4 torpedo-tubes	19	600	—
Yoshino	1892	4,150	4 6-inch Q.F. 8 4·7-inch Q.F. 22 smaller guns 5 torpedo-tubes	23	1,000	—
Hashidate	1891	4,210	1 12·5-inch 11 4·7-inch Q.F. 19 smaller guns 4 torpedo-tubes	17	400	—
Matsushima ... Itsukushima ...	1890	4,210	1 12·5-inch 12 4·7-inch Q.F. 16 smaller guns 4 torpedo-tubes	17½	400	—
Akashi	1897	2,800	2 6-inch Q.F. 6 4·7-inch Q.F. 16 smaller guns 2 torpedo-tubes	20	600	11,000
Suma	1895	2,700				

BUILDING.

Chihaya	1900	1,200	2 4·7-inch Q.F. 4 smaller Q.F. 5 torpedo-tubes	21	200	—
Niitaka ... ... Tsushima	—	3,365	6 6-inch Q.F. 14 smaller guns 3 torpedo-tubes	20	600	—

UNPROTECTED CRUISERS.

BUILT.

Miyako	1897	1,800	2 4·7-inch Q.F. 10 light guns 2 torpedo-tubes	20	—	—

UNPROTECTED CRUISERS—BUILT—*continued.* (JAPAN)

Name.	Date of launch or floating.	Displacement.	Armament.	Speed.	Full coal-capacity.	Radius of action.
		Tons.		Knots.	Tons.	Miles.
Yaeyama	1889	1,583	3 4·7-inch Q.F. 8 light and machine guns 2 torpedo-tubes	20	—	—

TORPEDO-VESSELS.

BUILT.

2 vessels	1894	—	—	—	—	—	—

TORPEDO-BOAT DESTROYERS.

BUILT.

16 vessels	1898–1900	279–311	1 12-pr. Q.F. 5 smaller Q.F. guns	30–33	80–90	—

TORPEDO-BOATS.

BUILT OR BUILDING.

50 vessels	1889–1900	80–203	1–2 small Q.F. and machine guns 2–4 torpedo-tubes	—	—	—

NOTES TO EFFECTIVE SHIPS OF THE WORLD'S NAVIES.

(*a*) These vessels are usually classed as coast-defence ships, but the Admiralty class them as battleships.

(*b*) These ships are fitted to enable them to carry oil. The French battleship *Jena* has made very satisfactory trials with liquid fuel. When oil and coal were used in mixed combustion, the engines passed from 4000 to 6500 indicated horse-power.

(*c*) These six vessels are armoured, and are probably the most surprising ships now under construction. The *Novik* is the parent ship. She is built of steel with exceedingly fine lines to give her high speed, has a ram-bow, raised forecastle, three smoke-pipes, and one mast, with fighting top and signal yards, between the middle and after smoke-pipes. Three search-lights are carried. The deadwood is much cut away aft to increase her manœuvring power. The balanced rudder is suspended without support underneath, and is sharp on forward and after edges. The protective deck extends from stem to stern in a curve, is sloped towards the sides, and reaches from 1·3 feet above to 4·25 feet below the water-line. It is two inches thick on the slopes, from

1·2 to 0·6 inches on the horizontal portions, and is raised in dome-shaped form over the two engine-rooms. Here the slopes are 2·75 inches thick.

The armament comprises six 4·7-inch quick-firing guns in shields, one on forecastle and poop, and four in broadside on the upper deck; eight 3-pounder Q.F. guns, six in broadside on the upper deck, and two on forecastle abaft the bridge; two Maxims, and six above-water torpedo-tubes, one in bow and stern and two on each broadside.

The most marked peculiarity of the ship is the high engine efficiency of 18,000 I.H.P., for a speed of 25 knots. The small draught of the ship necessitated the division of the power among three engines of equal efficiency and three screws. The circle of revolution of the centre screw cuts the prolonged line of keel, although its diameter is less than that of the wing screws. The latter are three-bladed, while the centre one is four-bladed. There are three four-cylinder, triple-expansion engines. That for the centre screw is farthest aft. Adjoining this forward is a fire room with four Schichau boilers. Then come the other engines side by side, but separated by a longitudinal bulkhead. Forward of these are two boiler-rooms, each containing four Thornycroft boilers, separated by a transverse bulkhead. She has a radius of action of 6000 miles. The complement is about 300 officers and men.

She has good sea-keeping qualities, besides guns and protection, and speed that will render her a dangerous opponent for any torpedo-boats or destroyers

which may stray into her vicinity. In a seaway she will be able to travel even faster than a flotilla of destroyers, each a tenth her size and more than proportionately fragile and liable to overstrain or worse. While destroyers carry only a few 12-pdrs. and 3-pdrs., this ship carries 4·7-in. Q.F. guns; and six torpedo-tubes give her greater offensive power with this weapon than any other vessel afloat.

TOTAL NUMBER OF SHIPS IN THE WORLD'S NAVIES.

THE following statistics have been compiled from the Admiralty Return, Fleets (Great Britain and Foreign Countries), dated March 28, 1901, but the information has been brought up to date, March 31, 1902. All the old vessels of all the Fleets are included which were enumerated in the Admiralty return, with those which are now building. Since the Admiralty figures were published, the authorities have struck off the effective list three old British battleships, the Ajax, Agamemnon, and Temeraire, reducing the total number to 58, with an aggregate displacement of 642,145 tons, and of these seven, the Dreadnought, Alexandra, Hercules, Inflexible, Monarch, Sultan, and Superb have big guns of the muzzle-loading type; none of the foreign battleships have these obsolete weapons. Four of the old coast-defence ships have also been removed, reducing the number to six, all of them over thirty years old, with a total displacement of 23,350 tons.

	Great Britain.		France.		Russia.		Germany.		Italy.		United States.		Japan.	
	No.	Displacement.	No.	Displacement.	No.	Displacement.	No.	Displacement.	No.	Displacement.	No.	Displacement.	No.	Displacement.
Battleships—														
Built	56	667,005	29	287,704	19	200,106	22	156,116	17	167,878	10	106,144	7	92,420
Building	13	198,050	4	50,594	7	93,248	7	84,065	4	51,278	8	110,850	—	—
Armoured cruisers—														
Built	13	104,000	11	72,952	11	83,231	4	35,195	5	31,891	2	17,415	7	60,487
Building	22	237,600	12	118,434	1	7,800	3	26,390	1	7,294	9	109,500	—	—
Protected cruisers—														
Built	105	513,070	39	137,026	7	35,372	19	68,989	16	41,427	14	61,403	14	51,568
Building	4	17,760	—	—	12	57,130	3	7,800	—	—	6	21,000	3	4,400
Unprotected cruisers—														
Built	11	23,010	7	22,962	3	8,090	20	40,780	—	—	6	11,397	9	13,802
Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Coast-defence ships—														
Built	10	38,900	14	43,331	14	42,873	11	12,001	—	—	15	43,934	4	10,280
Building	—	—	—	—	1	5,000	—	—	—	—	4	12,940	—	—
Torpedo-vessels ...	35	27,840	15	8,912	17	14,709	2	1,862	14	11,308	—	—	1	850
Torpedo-boat destroyers	134	45,558	31	9,256	53	13,320	30	10,275	11	3,483	20	7,790	19	5,963
Torpedo-boats	108	9,450	279	19,751	195	13,327	140	11,990	163	8,148	32	4,377	74	7,508
Submarines	9	—	37	—	1	—	—	—	1	—	8	—	—	—

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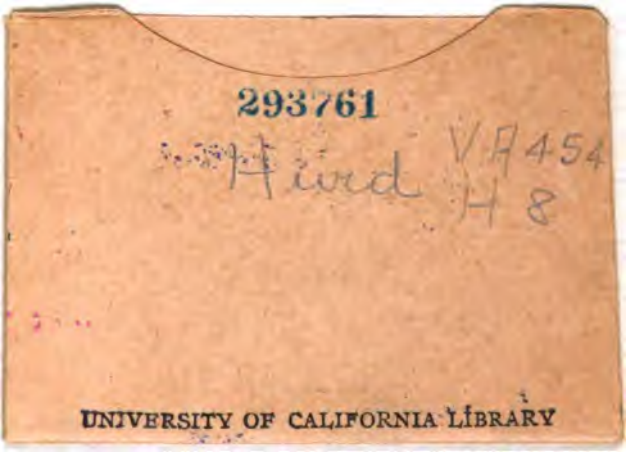
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